APRIL 1978 Number 404 - Part I

P-A STACKS

Solar-Geophysical Data prompt reports

Data for March 1978 -- February 1978

Explanation of Data Reports Issued as Number 402 (Supplement) February 1978

NEW DATA PAGE 35

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA SERVICE / BOULDER, COLORADO

U.S. DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Richard A. Frank, Administrator
ENVIRONMENTAL DATA SERVICE
Thomas S. Austin, Director

Solar - Geophysical Data

NO. 404 APRIL 1978

Part I (Prompt Reports)

DATA FOR
MARCH 1978
FEBRUARY 1978

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80302.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO 80302. Subscription Price: $34.00 annually for both Part I (Prompt Reports) and Part II (Comprehensive Reports) or $18.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add $32.00 for both parts or $16.00 for either part. Single issue price $1.50 for either part and $1.40 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC.

To standardize referencing these reports in the open literature, the following format is recommended:

Solar-Geophysical Data, 390 Part I (or Part II), pages, February 1977, U.S. Department of Commerce, (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 404

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Director
Solar-Terrestrial Data Services Division

CONTENTS

PAGE

Part I (Prompt Reports)

Index for 1977 and 1978 — 2

Data for March 1978 — 3-36

Data for February 1978 — 37-146

Part II (Comprehensive Reports)

Index for 1977 and 1978 — 2

Data for October 1977 — 3-42

Data for September 1977 — 43-53

Miscellaneous Data — 55-70

Solar Radio Waves
Spectral Observations Culgoora, January 1978

Solar X-ray Radiation
OSO-8 5.09Å, 5.68Å, 5.82Å June-September 1977

INDEX FOR 1977 AND 1978 DATA PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1977					1978		
		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
A.	SOLAR AND INTERPLANETARY PHENOMENA								
A.1	Sunspot Drawings	398A 36	399A 34	400A 30	401A 36	402A 38	403A 47	404A 40	
A.2a	Zurich Provisional Relative Sunspot Numbers Rz	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.2b	Zurich Final Sunspot Numbers Rz	404A 7	404A 8	404A 8	404A 8	404A 8			
A.2c	American Relative Sunspot Numbers RA'	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.3a	Mt. Wilson Magnetograms	898A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	398A 98	399A 94	400A 92	401A 96	402A100	403A108	404A 96	
A.3c	Kitt Peak Magnetograms	398A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.3d	Mean Solar Magnetic Field (Stanford)	397A 25	398A 29	399A 29	400A 24	401A 31	402A 33	404A 33	
A.4	H-alpha Filtergrams	398A 36	399A 34	400A 30	401A 36	402A 38	403A 47	404A 40	
A.5	Calcium Plage Drawings - McMath (or Catania)	398A 36	399A 34	400A 30	401A 36	402A 38	403A 47	404A 40	
A.5a	Calcium Plage (McMath) and Sunspot Regions	398A 98	399A 94	400A 92	401A 96	402A100	403A108	404A 96	
A.5b	McMath Daily Calcium Plage Indices	398A105	399A 99	400A 99	401A100	402A105	403A114	404A104	
A.6	H-alpha Synoptic Charts	398A 34	399A 32	400A 28	401A 35	402A 36	403A 44	404A 38	
A.6b	Synoptic Chart and Active Regions (Paris)	402B 4	403B 4	404B 4					
A.7f	Helium D3 Chromosphere (Big Bear)	397A 19	398A 24	399A 24	400A 21	401A 28	402A 29	403A 36	404A 29
A.7g	Helium Synoptic Maps (KPNO)	397A 20	398A 22	399A 23	400A 20	401A 27	402A 28	403A 35	404A 27
A.7h	Coronal Line Emission (Sac Peak)	398A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.9cb	8.6 mm Radio Maps of the Sun (NOSC - La Posta)	398A 36	400B 57	400A 30	401A 36	402A 38	403A 47	404A 40	
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	398A 36	400B 52	400A 30	401A 36	402A 38	403A 47	404A 40	
A.10a	169 MHz - Interferometric Observations (Nancay)	397A 13	398A 14	399A 14	400A 12	401A 15	402A 16	403A 20	404A 17
A.10c	21 cm East-West Solar Scans (Fleurs)	397A 15	398A 16	399A 16	400A 14	401A 17	402A 19	403A 23	404A 20
A.10d	43 cm East-West Solar Scans (Fleurs)	397A 16	398A 17	399A 17	400A 15	401A 18	402A 20	403A 24	404A 21
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	397A 14	398A 15	399A 15	400A 13	401A 16	402A 18	403A 22	404A 19
A.10f	3 cm East-West Solar Scans (Toyokawa)					403B 68	402A 17	403A 21	404A 18
A.11k	Solar X-ray Radiation (SOLRAD 11)						403A116	404A108	
A.11g	Solar X-ray (SMS/GOES)	---	398A 25	399A 20	400A 17	401A 22	402A 24	403A 29	404A 24
A.11h	Solar X-ray (OSO-8; 1975-057A)	398A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.11i	Solar X-ray (Columbia U.)	404B 65	404B 68	404B 40					
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	397A 23	---	399A 26	---	---	402A 30	---	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	---	---	399A 27	---	---	402A 31	---	---
A.12e	Energetic Solar Particles (IMP H & J)	402B 24	403B 37	404B 35					
A.13a	Solar Wind (Pioneers 6 & 7)	397A 23	---	399A 26	---	---	402A 30	---	---
A.13ab	Solar Wind (Pioneers 8 & 9)	---	---	399A 27	---	---	402A 31	---	---
A.13d	Solar Wind from IPS Measurements	397A 27	398A 27	399A 25	400A 25	401A 29	402A 34	403A 37	404A 31
A.13e	Solar Plasma (IMP H & J)	402B 23	403B 22	404B 34					
A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	---	---	---	---	---	402A 31	---	---
A.17c	Inferred IP Magnetic Field	397A 24	398A 28	400A 22	400A 22	401A 30	402A 32	403A 38	404A 32
A.18	Interplanetary Electric Field (Pioneer 8)	---	---	399A 27	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	---	---	---	---	---	402A 31	---	---
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA								
B.52	Graphs of Transmission Frequency Range	398A124	399A128	400A120	401A116	402A132	403A148	404A144	
B.53	Quality Figures Based on Frequency Ranges	398A126	399A127	400A122	401A118	402A131	403A150	404A146	
C.	FLARE-ASSOCIATED EVENTS								
C.1a	Optical Observations Flares	397A 10	398A 10	399A 10	400A 10	401A 10	402A 12	403A 12	404A 12
C.1ba	Optical Observations Flares (Standardized Data)	402B 8	403B 8	404B 8					
C.1d	Flare Patrol Observations	397A 12	398A 13	399A 13	400A 11	401A 14	402A 15	403A 19	404A 16
C.1d	Flare Patrol Observations	402B 17	403B 21	404B 22					
C.1e	Flare Indices (by day)	402B 16	403B 20	404B 21					
C.1f	Flare Indices (by Region)	403B 53	404B 53						
C.3	Solar Radio Waves - Outstanding Occurrences	402B 18	403B 22	404B 23					
	Solar Radio Waves - Fixed Frequencies - Selected	397A 17	398A 18	399A 18	400A 16	401A 19	402A 21	403A 25	404A 22
C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	399B 36	399A113	401B 44	403B 64	403B 65			
C.4a	Solar Radio Spectral Obs. (Fort Davis)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4d	Solar Radio Spectral Obs. (Culgoora)	400B 62	399A102	401B 38	403B 56	403B 59	404B 56		
C.4e	Solar Radio Spectral Obs. (Weissenau)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4i	Solar Radio Spectral Obs. (Durnten)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4j	Solar Radio Spectral Obs. (Manila)		399A102	400A101	401A102	402A108	403A132	404A122	
C.5e	Solar X-ray (SMS/GOES)	397A 22	399B 37	399A 22	400A 19	401A 24	402A 26	403A 29	404A 26
C.5f	Solar X-ray (Columbia U.)								
C.6	Sudden Ionospheric Disturbances	398A106	399A100	400A100	401A101	402A106	403A115	404A105	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA								
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	398A117	399A120	400A113	401A109	402A125	403A142	404A139	
D.1ba	27-day Chart of Kp Indices	398A119	399A122	400A115	401A111	402A127	403A144	404A141	
D.1c	27-day Chart of C9	404A142	404A142	404A142	404A142	404A142			
D.1d	Principal Magnetic Storms	398A122	399A125	400A118	401A114	402A130	403A145	404A143	
D.1e	Reduced Magnetograms								
D.1f	Sudden Commencement and Solar Flare Effects	398A123	399A126	400A119	401A115	403B 69	403A147		
D.1g	Equatorial Indices Dst	398A121	399A124	400A117	401A113	402A129			
F.	COSMIC RAYS								
F.1a	Cosmic Ray Neutron Counts (Deep River)	398A116	399A115	400A112	402B 47	402A124	403A138	404A138	
F.1b	Cosmic Ray Neutron Counts (Climax)	398A116	399A115	400A112	401A108	402A124			
F.1e	Cosmic Ray Neutron Counts (Alert)	398A116	399A115	400A112	402B 47	402A124	403A138	404A138	
F.1f	Cosmic Ray Neutron Counts (Calgary)	400B 70	400B 70	402B 47					
F.1g	Cosmic Ray Neutron Counts (Sulphur Mountain)	400B 70	---	402B 47					
F.1h	Cosmic Ray Neutron Counts (Thule)								
F.1i	Cosmic Ray Neutron Counts (Kiel)	398A116	399A115	400A112	401A108	402A124	403A138	404A138	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	398A116	399A115	400A112	401A108	402A124	403A138	404A138	
F.1k	Cosmic Ray Neutron Counts (Kula)	398A116							
H.	MISCELLANEOUS								
H.60	IUWDS Alert Decisions	397A 4	398A 4	399A 4	400A 4	401A 4	402A 5	403A 5	404A 4
H.62	Abbreviated Calendar Record	403B 46	404B 46						

Notes:

"398A 36" listed under 1977 Aug means that data for August 1977 were contained in *Solar-Geophysical Data* Number 398 - Part I, beginning on page 36.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

MARCH 1978 DATA

Contents

	Page
Alert Period	
IUWDS Alert Periods (Advance and Worldwide)	4-7
Daily Solar Indices	
12-Month Tables Sunspot Numbers, R_Z, and 2800 MHz Flux Adjusted to 1 A.U.	8
Combined Table Sunspot Numbers and Solar Fluxes	9
Graph of Sunspot Cycles	10
Zürich Smoothed Observed and Predicted Sunspot Numbers	11
Solar Flares	
Hα Solar Flares	12-15
No-Flare-Patrol Chart	16
Solar Radio Waves	
169 MHz Solar Interferometric Chart - Nancay	17
3 cm East-West Solar Scans - Toyokawa	18
10.7 cm East-West Solar Scans - ARO, Ottawa	19
21 cm East-West Solar Scans - Fleurs	20
43 cm East-West Solar Scans - Fleurs	21
Selected Fixed-Frequency Occurrences	22-23
Solar X-ray Radiation	
SMS-2 GOES	24-26
Coronal Holes	
Helium 10830 Å Synoptic Map	28-29
Helium D3 Chromosphere	30
Solar Wind Measurements	
Scintillation Observations	31
Inferred IP Magnetic Field Polarities	32
Mean Solar Magnetic Field	
Stanford Mean Solar Magnetic Field Map	33
Stanford Mean Solar Magnetic Field Table	34
Geomagnetic Substorms	35-36

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

MARCH 1978

PRESTO MESSAGES (the RAPID report of major events).

BOULDER 09/1905Z SOFLARE M1 S35E90 09/1842Z BRIGHT EJECTA BEHIND LIMB. TENFLARE 480 F.U. 09/1941Z 16 MINUTES DURATION.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
060	1	28	178	138	28	N20W61	2	0	0		28	N20W61	Q	SOLNIL MAGALERT MINOR 01
						S20W22	0	0	0			S20W22	Q	
						N38W28	2	0	0			N38W28	Q	
						S23W00	0	0	0			S23W00	Q	
						S24E23	0	0	0			S24E23	Q	
						N20W16	0	0	0			N20W16	Q	
						N23W51	0	0	0			N23W51	Q	
						N13W04	0	0	0			N13W04	Q	
						S26E09	0	0	0			S26E09	Q	
061	2	1	190	139	20	N19W79	0	0	0		1	N19W79	Q	SOLQUIET MAGALERT MINOR 02
						S20W35	0	0	0			S20W35	Q	
						N38W40	0	0	0			N38W40	Q	
						S22E11	0	0	0			S22E11	Q	
						S24E12	0	0	0			S24E12	Q	
						N20E03	0	0	0			N20E03	Q	
						N23W67	0	0	0			N23W67	Q	
						S26W00	0	0	0			S26W00	Q	
						N20E69	0	0	0			N20E69	E	
						N17E74	0	0	0			N17E74	E	
062	3	2	250	144	22	N21W89	2	0	0		2	N21W89	Q	SOLALERT 03/06 MAGNIL
						S19W47	1	0	0			S19W47	Q	
						N38W53	17	0	0			N38W53	E	
						S22W23	0	0	0			S22W23	Q	
						S23W00	1	0	0			S23W00	Q	
						N19W09	0	0	0			N19W09	Q	
						S28W14	0	0	0			S28W14	Q	
						N21E57	3	0	0			N21E57	E	
						N16E60	3	0	0			N16E60	E	
						S18W31	0	0	0			S18W31	Q	
						N30E70	0	0	0			N30E70	Q	
063	4	3	213	149	12	S16W65	0	0	0		3	S16W65	Q	SOLALERT 04/06 MAGQUIET
						N38W63	2	0	0			N38W63	E	
						S17W38	0	0	0			S17W38	Q	
						S24W15	0	0	0			S24W15	Q	
						N19W21	0	0	0			N19W21	Q	
						S28W31	0	0	0			S28W31	Q	
						N17E45	1	0	0			N17E45	E	
						N11E45	0	0	0			N11E45	Q	
						S27E28	0	0	0			S27E28	Q	
						N29E56	1	0	0			N29E56	Q	
064	5	4	195	151	02	S17W76	2	0	0		4	S17W76	E	SOLALERT 05/06 MAGQUIET
						N36W78	4	0	0			N36W78	E	
						S18W48	0	0	0			S18W48	Q	
						S25W26	0	0	0			S25W26	Q	
						N18W34	0	0	0			N18W34	Q	
						N20E31	2	2	0			N20E31	E	
						N15E31	0	0	0			N15E31	Q	
						S25E16	0	0	0			S25E16	Q	
						N29E44	1	0	0			N29E44	Q	
						N16E70	0	0	0			N16E70	Q	
065	6	5	167	157	07	S20W85	1	0	0		5	S20W85	Q	SOLALERT MAGQUIET
						S18W63	1	0	0			S18W63	Q	
						S25W37	0	0	0			S25W37	Q	
						N18W48	0	0	0			N18W48	Q	
						N20E17	1	0	0			N20E17	E	
						N15E20	0	0	0			N15E20	E	
						S23E03	0	0	0			S23E03	Q	
						N28E29	1	0	0			N28E29	Q	
						N17E59	1	0	0			N17E59	E	
066	7	6	109	165	06	N17W58	1	0	0		6	N17W58	Q	SOLALERT MAGQUIET
						N21E06	1	1	0			N21E06	E	
						N13E04	3	0	0			N13E04	Q	
						S23W07	0	0	0			S23W07	Q	
						N27E18	0	0	0			N27E18	Q	
						N17E45	0	0	0			N17E45	Q	
067	8	7	148	168	06	N19W71	0	0	0		7	N19W71	Q	SOLNIL MAGQUIET
						S23W78	0	0	0			S23W78	Q	
						N21W05	0	0	0			N21W05	E	
						N13W09	0	0	0			N13W09	Q	
						N26E04	0	0	0			N26E04	Q	
						N16E34	1	0	0			N16E34	Q	
						N15E72	0	0	0			N15E72	E	
068	9	8	173	171	12	N19W85	0	0	0		8	N19W85	Q	SOLQUIET MAGQUIET
						N21W21	0	0	0			N21W21	Q	
						N21W22	1	0	0			N21W22	Q	
						N26W10	0	0	0			N26W10	Q	
						N16E20	0	0	0			N16E20	Q	
						N15E59	0	0	0			N15E59	Q	
						S03E65	0	0	0			S03E65	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

MARCH 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
069	10	9	143	186	12	N21W31	2	0	0	SOFLARE M1 S35E90	9	N21W31	Q	SOLQUIET MAGQUIET
						N13W35	0	0	0	09/1842Z BRIGHT		N13W35	Q	
						N27W22	0	0	0	EJECTA BEHIND LIMB		N27W22	Q	
						N16E06	2	0	0	TENFLARE 480 F.U.		N16E06	Q	
						N16E46	1	0	0	09/1941Z 16 MINUTES		N16E46	Q	
						S04E50	0	0	0	DURATION		S04E50	Q	
						S29E76	1	0	0			S29E76	Q	
070	11	10	142	180	13	N21W48	0	0	0		10	N21W48	Q	SOLQUIET MAGQUIET
						N14W51	0	0	0			N14W51	Q	
						N27W35	2	0	0			N27W35	E	
						N15W04	2	0	0			N15W04	E	
						N16E35	2	0	0			N16E35	E	
						S04E36	0	0	0			S04E36	Q	
						S30E68	3	0	0			S30E68	E	
						S33E82	0	0	0			S33E82	E	
071	12	11	134	177	07	N21W60	2	0	0		11	N21W60	E	SOLQUIET MAGQUIET
						N14W66	0	0	0			N14W66	Q	
						N27W48	2	0	0			N27W48	Q	
						N16W20	1	0	0			N16W20	E	
						N16E22	0	0	0			N16E22	E	
						S03E24	0	0	0			S03E24	Q	
						S30E55	4	0	0			S30E55	E	
						S33E67	1	0	0			S33E67	E	
072	13	12	138	172	02	N18W74	2	0	0		12	N18W74	Q	SOLQUIET MAGQUIET
						N26W58	0	0	0			N26W58	Q	
						N15W32	1	0	0			N15W32	Q	
						N16E11	2	0	0			N16E11	E	
						S02E09	0	0	0			S02E09	Q	
						S28E42	0	0	0			S28E42	E	
						S32E53	7	0	0			S32E53	E	
						S29E26	0	0	0			S29E26	Q	
073	14	13	129	162	08	N28W73	2	0	0		13	N28W73	Q	SOLQUIET MAGQUIET
						N18W46	1	0	0			N18W46	Q	
						N15W02	1	0	0			N15W02	E	
						S03W04	0	0	0			S03W04	Q	
						S30E29	0	0	0			S30E29	E	
						S32E40	1	0	0			S32E40	E	
						S29E13	0	0	0			S29E13	Q	
074	15	14	141	162	10	N14W57	0	0	0		14	N14W57	Q	SOLQUIET MAGQUIET STRATWARM ALERT /WEDNESDAY/ STRATWARM EXISTS ARCTIC REGION. WARM ANTICYCLONE PROGRESSING OVER POLE IN MIDSTRATOSPHERE. SPRINGTIME REVERSAL EXPECTED AT ALL STRATOSPHERIC LEVELS DURING NEXT FEW WEEKS.
						N15W15	1	0	0			N15W15	E	
						S02W17	0	0	0			S02W17	Q	
						S28E17	2	0	0			S28E17	E	
						S32E29	0	0	0			S32E29	Q	
						S29E03	0	0	0			S29E03	Q	
						N32E65	0	0	0			N32E65	Q	
						N18E71	8	0	0			N18E71	E	
075	16	15	118	156	12	N13W69	0	0	0		15	N13W69	Q	SOLQUIET MAGQUIET
						N15W30	1	0	0			N15W30	Q	
						S02W31	0	0	0			S02W31	Q	
						S28E04	2	0	0			S28E04	E	
						S33E16	0	0	0			S33E16	Q	
						N33E52	0	0	0			N33E52	Q	
						N19E56	3	0	0			N19E56	E	
076	17	16	118	138	14	N12W80	0	0	0		16	N12W80	Q	SOLQUIET MAGQUIET
						N16W43	0	0	0			N16W43	Q	
						S02W46	0	0	0			S02W46	Q	
						S30W05	2	0	0			S30W05	E	
						S32E05	0	0	0			S32E05	Q	
						N32E40	0	0	0			N32E40	Q	
						N20E45	0	0	0			N20E45	Q	
077	18	17	104	136	16	N15W55	0	0	0		17	N15W55	Q	SOLQUIET MAGQUIET
						S01W59	0	0	0			S01W59	Q	
						S32W08	0	0	0			S32W08	Q	
						N32E28	0	0	0			N32E28	Q	
						N18E30	1	0	0			N18E30	Q	
						N20E64	0	0	0			N20E64	Q	
						N28W37	0	0	0			N28W37	Q	
078	19	18	112	134	15	S03W74	0	0	0		18	S03W74	Q	SOLQUIET MAGQUIET
						N15W68	1	0	0			N15W68	Q	
						S33W25	0	0	0			S33W25	Q	
						N32E17	0	0	0			N32E17	Q	
						N19E21	5	0	0			N19E21	Q	
						S33E32	0	0	0			S33E32	Q	
						N20E53	0	0	0			N20E53	Q	
079	20	19	119	131	12	N24W82	1	0	0		19	N24W82	Q	SOLQUIET MAGQUIET
						S33W36	1	0	0			S33W36	Q	
						N32E04	0	0	0			N32E04	Q	
						N19E07	0	0	0			N19E07	Q	
						N21E41	1	0	0			N21E41	Q	
						S33E19	0	0	0			S33E19	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

MARCH 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No. of Flares Total	M	X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Desc*	Alert Situations
080	21	20	79	126	05	S32W49	0	0	0		20	S32W49	Q	SOLQUIET MAGQUIET
						N30W06	0	0	0			N30W06	Q	
						N19W02	0	0	0			N19W02	Q	
						N19E28	0	0	0			N19E28	Q	
						S22E74	0	0	0			S22E74	Q	
081	22	21	114	119	08	S32W63	0	0	0		21	S32W63	Q	SOLQUIET MAGQUIET
						N31W18	0	0	0			N31W18	Q	
						N20W16	3	0	0			N20W16	Q	
						N18E16	0	0	0			N18E16	Q	
						S23E63	0	0	0			S23E63	Q	
						N13E67	4	0	0			N13E67	Q	
						N11W12	0	0	0			N11W12	Q	
						N37E73	0	0	0			N37E73	Q	
082	23	22	138	118	07	S23W76	1	0	0		22	S23W76	Q	SOLQUIET MAGQUIET
						N31W30	0	0	0			N31W30	Q	
						N20W29	3	0	0			N20W29	Q	
						N19E04	0	0	0			N19E04	Q	
						S24E52	0	0	0			S24E52	Q	
						N13E54	0	0	0			N13E54	Q	
						N36E57	0	0	0			N36E57	Q	
						S41W46	2	0	0			S41W46	Q	
						S32E09	0	0	0			S32E09	Q	
						N19W50	0	0	0			N19W50	Q	
083	24	23	157	117	14	S33W88	1	0	0		23	S33W88	Q	SOLQUIET MAGQUIET
						N17W63	0	0	0			N17W63	Q	
						S42W57	0	0	0			S42W57	Q	
						N31W44	0	0	0			N31W44	Q	
						N20W43	0	0	0			N20W43	Q	
						N19W10	0	0	0			N19W10	Q	
						S32W01	0	0	0			S32W01	Q	
						S22E38	0	0	0			S22E38	Q	
						N15E40	0	0	0			N15E40	Q	
						N37E42	0	0	0			N37E42	Q	
						S28E79	0	0	0			S28E79	Q	
084	25	24	160	118	04	N17W75	0	0	0		24	N17W75	Q	SOLQUIET MAGQUIET
						S40W40	0	0	0			S40W40	Q	
						N20W58	6	0	0			N20W58	Q	
						N31W56	0	0	0			N31W56	Q	
						N19W22	0	0	0			N19W22	Q	
						S32W13	0	0	0			S32W13	Q	
						S31E13	0	0	0			S31E13	Q	
						S22E24	0	0	0			S22E24	Q	
						N14E40	0	0	0			N14E40	Q	
						N38E34	1	0	0			N38E34	Q	
						S24E60	0	0	0			S24E60	Q	
085	26	25	156	119	04	S42W81	1	0	0		25	S42W81	Q	SOLQUIET MAGQUIET
						N29W71	0	0	0			N28W71	Q	
						N18W71	1	0	0			N18W71	Q	
						N19W36	0	0	0			N19W36	Q	
						S31W07	0	0	0			S31W07	Q	
						S31E02	2	0	0			S31E02	Q	
						S22E12	0	0	0			S22E12	Q	
						N16E17	0	0	0			N16E17	Q	
						N37E20	1	0	0			N37E20	Q	
086	27	26	70	113	27	S21W03	0	0	0		26	S21W03	Q	SOLQUIET MAGALERT 27/29
						N15E02	0	0	0			N15E02	Q	
						N37E08	0	0	0			N37E08	Q	
						S32W10	3	0	0			S32W10	Q	
087	28	27	85	115	40	N15W17	1	0	0	MAGSTORM (GRADUAL)	27	N15W17	Q	SOLQUIET MAGALERT 28/29
						N38W00	0	0	0	BEGAN 26/0013Z		N38W00	Q	
						S25E18	0	0	0			S25E18	Q	
						S31W25	0	0	0			S31W25	Q	
						S24E09	0	0	0			S24E09	Q	
						S17E07	0	0	0			S17E07	Q	
088	29	28	102	113	22	N16W30	1	0	0		28	N16W30	Q	SOLQUIET MAGNIL
						N37W14	0	0	0			N37W14	Q	
						S25E07	0	0	0			S25E07	Q	
						S32W37	1	0	0			S32W37	Q	
						S27W04	0	0	0			S27W04	Q	
						S18W05	0	0	0			S18W05	Q	
						S30E17	0	0	0			S30E17	Q	
089	30	29	120	111	12	S21W39	0	0	0		29	S21W39	Q	SOLQUIET MAGQUIET
						N14W43	0	0	0			N14W43	Q	
						S25W06	0	0	0			S25W06	Q	
						S30W53	0	0	0			S30W53	Q	
						S28W14	0	0	0			S28W14	Q	
						S18W20	0	0	0			S18W20	Q	
						S32E06	0	0	0			S32E06	Q	
						N20E55	0	0	0			N20E55	Q	
						S15E71	0	0	0			S15E71	Q	
						S17E62	0	0	0			S17E62	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

MARCH 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
090	31	30	122	117	13	N14W55	0	0	0		30	N14W55	Q	SOLQUIET MAGQUIET
						S24W17	0	0	0			S24W17	Q	
						S30W64	0	0	0			S30W64	Q	
						S20W33	0	0	0			S20W33	Q	
						N24E39	0	0	0			N24E39	Q	
						S14E59	0	0	0			S14E59	Q	
						S17E49	0	0	0			S17E49	Q	
						N12W11	0	0	0			N12W11	Q	
						N32E64	0	0	0			N32E64	Q	
091	1	31	65	125	05	S26W80	0	0	0		31	S26W80	Q	SOLQUIET MAGQUIET
						S17E47	0	0	0			S17E47	Q	
						S19E39	0	0	0			S19E39	Q	
						N28E53	1	0	0			N28E53	Q	
						N21E72	0	0	0			N21E72	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

1977 FINAL / 1978 PROVISIONAL

DAY	JAN 1977	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN 1978	FEB	MAR
1	20	15	8	7	15	44	42	17	22	43	44	20	84	128	93
2	32	19	8	11	14	43	45	15	29	37	40	20	88	120	83
3	25	19	8	10	22	43	42	24	29	47	25	31	102	131	95
4	25	16	8	7	23	49	39	19	25	47	22	47	102	138	103
5	24	18	8	7	18	40	40	23	20	48	25	58	73	137	76
6	13	7	9	8	16	39	40	26	26	55	27	58	69	129	67
7	0	7	8	7	12	41	25	28	25	57	34	55	42	121	90
8	0	26	20	0	19	38	20	25	18	52	27	45	36	89	99
9	0	21	20	0	25	33	17	30	30	47	31	58	36	94	85
10	0	25	19	0	29	29	23	25	40	38	25	75	15	96	92
11	14	28	19	8	34	27	9	23	45	28	26	71	18	95	85
12	22	48	14	12	35	22	8	29	51	33	27	62	26	92	78
13	23	68	8	16	26	20	10	40	48	53	28	44	26	93	65
14	22	61	7	22	33	25	7	40	47	48	31	37	36	82	62
15	24	45	0	29	26	8	0	42	53	54	39	41	30	59	72
16	18	49	0	31	25	8	0	38	56	53	49	39	23	64	70
17	30	47	8	32	20	8	0	36	53	51	51	29	24	56	66
18	26	37	0	29	12	21	0	40	60	50	54	33	14	55	72
19	7	25	0	22	8	33	7	35	59	54	52	40	8	53	64
20	0	14	0	12	11	21	8	33	60	54	38	23	7	52	51
21	15	9	0	20	14	28	8	33	58	42	32	23	20	63	77
22	24	9	10	19	7	40	23	38	42	35	28	17	30	74	82
23	34	9	9	18	7	57	30	15	41	30	24	23	43	69	85
24	35	8	7	8	7	60	38	19	48	29	18	31	37	78	82
25	20	8	14	0	0	74	42	25	46	28	10	35	32	94	70
26	14	8	8	14	7	71	42	34	49	30	9	41	47	86	53
27	0	0	9	8	13	74	37	38	54	38	14	50	69	79	50
28	13	0	16	11	16	65	26	36	61	37	9	45	79	88	49
29	11		16	10	20	50	16	40	64	42	10	58	90		48
30	8		8	9	30	45	10	36	60	45	23	64	104		44
31	10		8		40		8	31		52		67	118		70
MEAN	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	49.3	89.8	73.5

1977 yearly mean = 27.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1977 / 1978

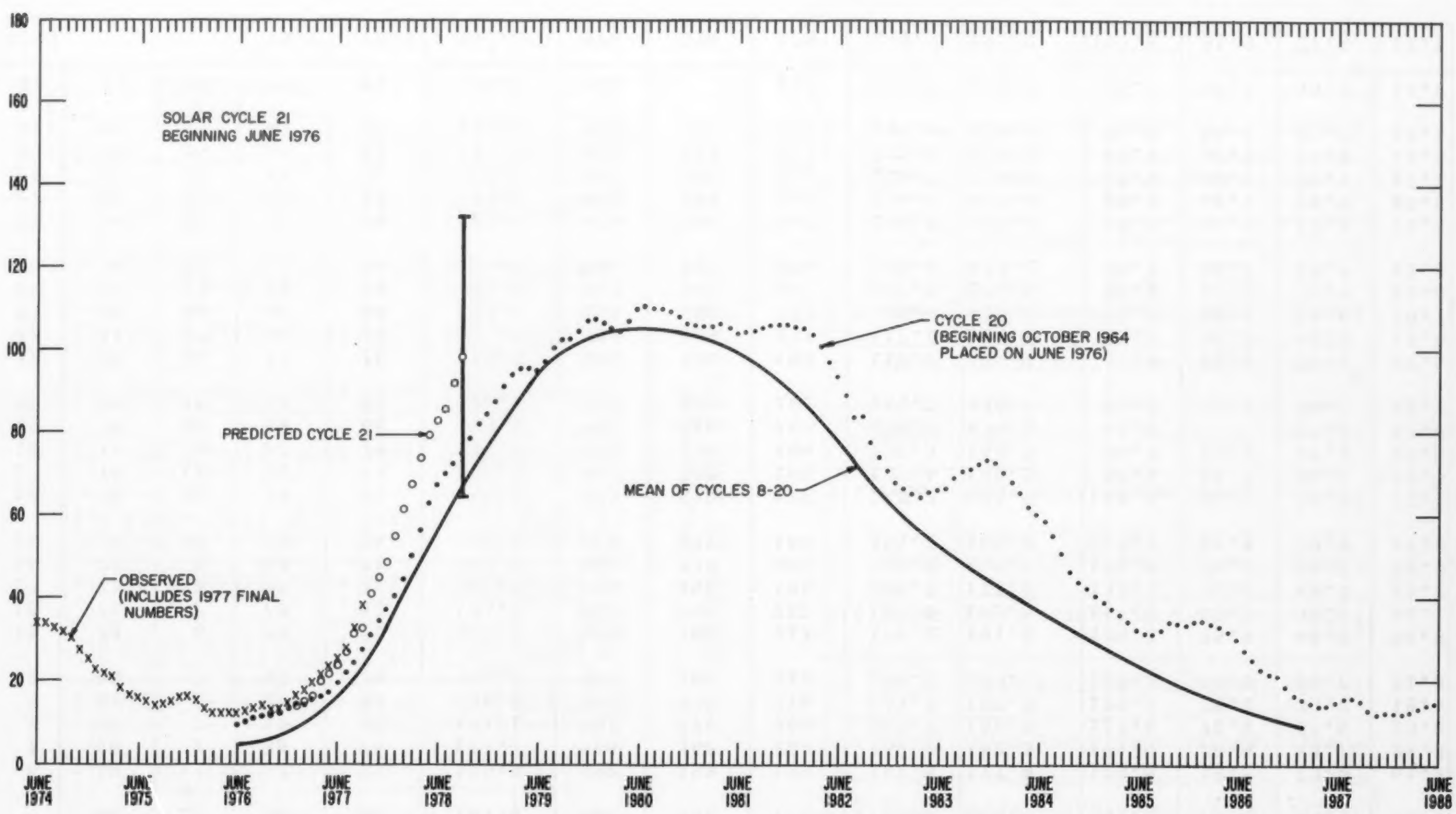
DAY	APR 1977	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN 1978	FEB	MAR
1	74.8	77.2	88.9	102.0	83.0*	83.1	93.8*	94.4	88.4	126.9*	139.1	136.3
2	76.3	78.5	90.9*	100.7	82.8	84.2	93.2	93.6	91.2	133.9	152.6	141.1
3	76.6	81.9	93.0*	97.4	82.3	87.2	97.4	90.4	93.7	130.2	156.6*	146.6
4	76.8	81.4*	94.2	94.0	82.9*	84.2	98.8	89.4	95.9	124.8	154.0	148.4
5	75.5	79.6	90.2*	88.0*	86.4	85.6	104.0*	90.6	96.9	119.2	159.0	154.5
6	76.1	78.5	90.6	90.2	88.2	84.9	103.5	91.1	102.0*	118.7*	156.1	162.8
7	75.5*	77.1*	92.0	85.2	86.9	89.3	105.5	90.2	105.5	111.6	157.3	165.2
8	74.3	77.9	91.9*	82.1	85.1	91.6	103.8	90.3	106.7	102.8	157.0*	168.7
9	74.8	83.6	90.9	79.0	85.9	95.9	100.7	91.1	112.6*	97.0	155.2	183.7
10	76.5	80.8	89.2*	76.9	87.2	99.8	96.4	93.1	114.7	93.5	148.7	179.1
11	79.2	80.8	87.2	76.2	87.6	104.6	95.3	94.9	107.4	93.1	154.2	175.2
12	80.2	79.7	83.3	75.8	86.5	107.8	100.8	91.4	111.0	92.1	159.0	169.8
13	82.7	81.5	84.2	77.8	89.0	112.9	98.5	94.0	100.6	90.3	151.2	160.9
14	83.4	84.8	82.3	76.8	87.5	118.2	98.9	97.9	93.7*	88.6	148.4	160.5
15	86.8	85.0	82.3	76.0	86.9	120.7	98.2	97.9	92.5	89.6	136.8	154.2
16	83.7	85.1	81.4	76.9	87.3	120.4	96.8	95.9	92.5	86.4	130.2	143.3
17	83.6	84.1	82.4	76.5	87.1	120.6	94.9	100.4	91.1	83.8	125.9	135.4
18	80.8	82.9	84.3	76.9	88.6	120.5	95.4	102.0*	93.6	84.7	124.9	132.3
19	79.8*	82.1	85.2	76.9	87.0	104.5	105.0	99.2	91.0	85.4	119.1	128.1
20	80.4*	81.3	88.9	80.1	88.7	108.8	99.6*	95.7*	88.7	87.0	122.2	125.3
21	80.8	81.4	92.4	81.7	90.8	104.9*	98.6*	92.8	87.8	91.4	122.2	118.2
22	80.1	82.9	98.8*	83.1	89.6	102.4	93.9	89.3	89.9	96.9	127.7	117.0
23	77.5	82.4	99.4	85.0	86.0	99.3	87.3	88.0	91.2	99.6	131.8	116.4
24	76.5	79.2	107.4	84.0	86.0	100.6	88.3	86.7	93.9	100.4	135.6	117.5
25	76.4	77.4	113.8	86.0	87.7	98.8	88.1	84.7	96.3	103.3	139.3	118.2
26	75.4	76.8	120.7	86.0	86.4	99.4	88.6	84.1	99.3	112.7	134.8	112.5
27	74.9	77.9	115.9*	85.4	85.4	100.0	88.5	83.8	98.3	116.4	137.5	114.1
28	74.2	79.1	113.4	87.5	82.4	100.0	90.3*	85.6	98.9	127.7*	135.4	112.7
29	74.8	81.7	111.9	86.7	86.1	99.4	90.3	85.6	105.6*	132.2*		111.1
30	76.6	89.9	106.9	84.1	85.5	97.7	94.9	85.3	114.7	134.9		115.4*
31		92.0		80.4	84.7		95.9		120.2	133.3*		124.5
MEAN	78.2	81.4	94.5	83.7	86.4	100.9	96.3	91.6	98.9	106.1	141.8	140.3

* adjusted for burst

DAILY SOLAR INDICES
MARCH 1978

MAR 1978	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS R_Z	SUNSPOT NUMBERS $R_{A'}$	OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U. AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	60	23	93	104	138.8	580	339	174	136.3	154.2	102.8	67.6	29.1	10.6
2	61	24	83	93	143.5	583	353	182	141.1	156.6	103.4	69.7	31.4	11.1
3	62	25	95	87	149.1	581	349	190	146.6	160.1	111.4	67.0	34.9	11.0
4	63	26	103	83	150.8	587	360	188	148.4	159.3	111.2	73.5	35.6	11.3
5	64	27	76	86	157.0	587	358	190	154.5	166.6	115.3	74.7	34.9	13.0
6	65	1	67	75	165.3	592	359	199	162.8	177.9	120.5	89.3	70.4	61.2
7	66	2	90	78	167.7	588	362	200	165.2	182.3	121.5	75.9	43.7	28.3
8	67	3	99	92	171.1	590	370	206	168.7	186.8	117.6	72.4	38.6	23.2
9	68	4	85	91	186.3	593	375	216	183.7	197.3	125.1	75.0	39.2	18.4
10	69	5	92	84	181.5	583	365	216	179.1	199.1	125.3	73.8	38.7	21.0
11	70	6	85	85	177.5	580	365	213	175.2	191.8	124.3	78.9	48.9	52.9
12	71	7	78	80	171.9	568	352	202	169.8	181.5	115.9	72.0	39.8	16.1
13	72	8	65	71	162.9	574	344	194	160.9	171.6	112.5	73.6	46.3	18.3
14	73	9	62	71	162.3	581	338	194	160.5	169.0	121.7	72.2	39.8	20.0
15	74	10	72	74	155.9	570	331	186	154.2	168.2	113.8	68.8	39.9	19.2
16	75	11	70	72	144.7	573	325	179	143.3	156.5	108.2	64.9	37.2	13.2
17	76	12	66	73	136.8	567	328	166	135.4	144.1	97.4	61.7	36.9	13.3
18	77	13	72	75	133.5	570	326	164	132.3	140.9	94.7	63.8	37.1	12.4
19	78	14	64	66	129.1	566	316	163	128.1	134.0	91.2		37.1	17.8
20	79	15	51	58	126.3	572	320	162	125.3	138.4	91.0	63.2	36.7	12.7
21	80	16	77	76	119.0	556	306	153	118.2	124.9	88.4	61.2	37.1	12.4
22	81	17	82	86	117.8	559	309	152	117.0	124.1	90.0	63.9	40.5	12.6
23	82	18	85	90	117.1	558	306	152	116.4	122.6	87.9	60.5	28.8	10.7
24	83	19	82	88	118.2	563	311	157	117.5	126.6	90.0	66.3	34.9	12.3
25	84	20	70	76	118.8	564	313	154	118.2	125.2	88.3	65.7	28.7	12.3
26	85	21	53	54	113.0	574	308	147	112.5	118.4	89.3	64.9	30.2	11.2
27	86	22	50	52	114.6	572	305	146	114.1	117.0	89.9	65.4	35.5	28.0
28	87	23	49	31	113.0	564	303	148	112.7	116.8	85.9	65.6	31.9	10.8
29	88	24	48	47	111.4	560	303	147	111.1	115.1	85.3	62.9	33.9	11.5
30	89	25	44	42	115.6*	565	312	152	115.4*	125.9	91.5	64.5	31.2	10.7
31	90	26	70	51	124.7	576		161	124.5	128.5	95.0	67.7	33.1	11.7
MEAN			73.5	73.9	141.8	574	334	176	140.3	151.0	103.4	68.9	37.5	17.7

* Adjusted for burst.
Note: Data gaps in AFGL Sagamore Hill are due to equipment problems.



OBSERVED AND PREDICTED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	14.0	14.3	13.4	13.5	14.8
1977	16.7	18.1	20.0	22.2	24.2	26.3	28.8	33.0	38.5]	42.9 (2)	47.5 (5)	52.1 (8)
1978	57.3 (11)	63.0 (13)	68.5 (15)	74.3 (18)	80.6 (22)	86.3 (25)	90.8 (28)	94.6 (31)	98.4 (34)	102.1 (35)	106.9 (34)	113.3 (34)
1979	118.7 (33)	123.2 (34)	127.4 (36)	130.7 (37)	133.4 (38)	137.6 (41)	142.1 (42)	145.0 (44)	146.6 (46)	147.0 (49)	146.6 (52)	145.5 (54)
1980	143.7 (54)	142.1 (54)	141.4 (52)	141.5 (52)	140.6 (54)	137.4 (54)	134.1 (54)	131.3 (54)	129.8 (54)	129.0 (54)	127.6 (55)	126.4 (57)
1981	126.5 (59)	125.8 (59)	123.4 (57)	120.4 (55)	118.2 (54)	116.6 (53)	116.1 (51)	116.5 (49)	116.2 (48)	115.1 (48)	113.3 (45)	110.3 (43)
1982	106.9 (41)	103.7 (40)	101.3 (39)	99.6 (38)	97.4 (36)	94.5 (35)	90.3 (33)	85.8 (31)	81.9 (29)	77.6 (25)	74.5 (24)	71.2 (23)
1983	67.5 (22)	65.0 (22)	63.3 (23)	61.5 (23)	59.5 (23)	57.4 (23)	55.7 (24)	54.1 (26)	52.5 (27)	51.3 (29)	50.3 (30)	49.6 (30)
1984	48.4 (31)	46.5 (30)	43.8 (29)	40.5 (29)	38.0 (30)	36.7 (31)	35.5 (31)	33.7 (31)	32.2 (30)	31.3 (29)	30.3 (28)	28.9 (27)
1985	27.8 (27)	27.0 (26)	26.1 (26)	25.5 (26)	24.8 (26)	23.8 (24)	23.0 (23)	22.2 (22)	21.5 (22)	20.7 (23)	19.7 (24)	19.2 (24)
1986	19.1 (24)	18.7 (24)	18.2 (23)	17.3 (22)	16.3 (21)	15.3 (20)	14.5 (19)	14.0 (18)	13.6 (17)	13.2 (16)	13.0 (15)	12.7 (13)
1987	12.8 (11)	13.1 (11)	13.7 (11)	14.6 (11)	15.5 (12)							

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1977 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1978 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*, February 1978) indicates that the most probable value for sunspot maximum is 151 ± 38.

Hα SOLAR FLARES

MARCH 1978

OBSERVATORY	OBSERVED UT DATE MAR	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
MCMA	01	1426	1432	1501	N18	E85	.999	15172	8.0	35	SF		C	1432			D
MCMA	01	1546	1548	1551	N37	W35	.814	15162	30.0	5	SN		C	1548	25	.5	D
MCMA	01	1816	1817	1825	S22	E16	.372	15170	3.0	9	SN		C	1817	50	.5	EH
MCMA	01	1855	1907	1912D	N19	E82	.996	15172	7.9	17D	SF		C	1907			E
MCMA	01	1948	1951	1958	N19	E80	.992	15172	7.8	10	SN		C	1951			D
MITK	02	0401	0404	0420	N22	E76	.984	15172	7.9	19	1N		C	0404	80		E
MCMA	02	1322E	1329	1358D	N35	W48	.877	15162	30.0	36D	1N		C	1329	100	2.7	F
MANI	02	2328	2330	2336	N34	W49	.879		30.3	8	SN		V		50		
MITK	03	0446	0449	0500	S23	W03	.289		3.0	14	SN		C	0449	90	1.0	
MONT	03	1132	1148	1226	S25	W04	.325		3.2	54	SN		C	1148	80		
CATA	03	1140	1140	1235	S27	W05	.249	15170	3.1	55	1B	2	C	1140	196	2.1	
MCMA	03	1925E		1959D	N18	E48	.802	15172	7.4	34D	SN		P	1925	80	1.4	E
MCMA	03	2103E		2111D	N36	W63	.954	15162	30.2	8D	SN		P	2106	25	.9	D
MITK	04	0046	0052	0114	N17	E43	.749	15172	7.3	28	1N		C	0052	220	3.4	E
MANI	04	0053	0055	0100D	N18	E44	.764	15172	7.3	7D	1N		V		180	2.8	F
MANI	04	0258E	0258U	0304D	N26	E49	.843	15172	7.8	6D	1N		P		200	3.6	F
CATA	04	1215	1225	1230D	N18	E39	.714	15172	7.4	15D	1B	2	P	1225	224	3.3	
WEND	04	1229E		1353	N17	E39	.708	15172	7.4	84D	1N		P		500	7.2	FT
MCMA	04	1306E		1430D	N18	E39	.714	15172	7.5	84D	1N		C	1322	135	2.0	F
MCMA	04	1310	1317	1329	N38	W72	.985	15162	30.1	19	SN		C	1317			D
MCMA	04	1320	1340	1430D	S18	W75	.960	15163	29.9	70D	SN		C	1340	30	1.2	D
MCMA	04	1540	1545	1555	N38	W70	.980	15162	30.4	15	SB		C	1545			DH
WEND	04	1546E		1553D	N37	W73	.986	15162	30.2	7D	1N		V		500	25.0	D
CATA	04	1550E	1550	1550D	N38	W66	.968		30.7		SB	1	P	1550	56		
MCMA	04	1618		1637	N38	W80	.998	15162	29.7	19	SF		C	1620			D
MCMA	04	1642E	1645	1648D	N38	W70	.980	15162	30.4	6D	SN		C	1645			D
MCMA	04	1743	1755	1826D	N18	E36	.683	15172	7.4	43D	SN		C	1755	40	.5	E
MITK	05	0532	0534	0538	N17	E27	.580		7.3	6	SN		C	0534	80	1.0	
MCMA	05	1248	1250	1252	N28	E33	.729	15172	8.0	4	SF		C	1250	25	.4	D
MCMA	05	1259	1300	1303	N24	E25	.628	15172	7.4	4	SN		C	1300	30	.5	D
MCMA	05	1430	1445	1520	N23	E28	.644	15172	7.7	50	SN		C	1445	25	.4	D
MANI	06	0149	0156	0207	N13	E19	.453		7.5	18	SF		P		150	1.7	F
MITK	06	0150	0156	0227	N13	E18	.443	15172	7.4	37	1N		C	0156	180	2.1	E
CATA	06	0745	0745	0750	S20	W65	.902		1.4	5	SN	2	C	0745	56	1.3	
MONT	06	1127	1159	1413D	N28	E22	.647	15172	8.1	166D	2B		C	1159	1000		F
CATA	06	1135	1215	1230D	N25	E18	.585	15172	7.8	55D	3B	2	P	1215	1405	18.0	
MCMA	06	1343E		1630D	N26	E14	.574	15172	7.6	167D	1N		P	1415	350	4.4	BFU
MANI	07	0601E	0602	0607D	N15	E47	.779		10.8	6D	SF		V		30	.4	
MANI	08	0058	0104	0331	N13	W09	.360	15172	7.4	153	1F		P		320	3.5	F
MCMA	08	1330	1334	1338D	N28	W06	.568	15172	8.1	8D	SF		C	1334	25	.3	D
MCMA	08	1621	1622	1626	S05	E71	.943	15177	14.0	5	SF		C	1922	20	.6	D
MCMA	08	1917	1920	1926	N18	E20	.518	15175	10.3	9	SN		C	1920	25	.3	DH
MCMA	08	1942	1943	1948	N18	E20	.518	15175	10.3	6	SN		C	1943	35	.4	E
MANI	09	0810E	0810U	0824	N18	E14	.466		10.4	14D	SN		V		80	.9	
CATA	09	0810E	0815	0820D	N18	E14	.466		10.4	10D	SB	2	P	0815	56	.6	
MANI	09	0828E	0830	0905D	N23	W13	.526		8.4	37D	SN		V		150	1.8	
CATA	09	0830E	0840	0900D	N30	W10	.606	15172	8.6	30D	2B	2	P	0840	393	5.1	
CATA	09	0950	1000	1000D	N12	E53	.826		13.4	10D	SB	2	P	1000	39	.7	
MCMA	09	1252	1254	1301	N19	E12	.465	15175	10.4	9	SN		C	1254	50	.6	D
MCMA	09	1840		1844D	S35	E90	.998	15178	16.5	4D	SF		C	1840			EH
MCMA	09	1913	1915	1935	S35	E90	.998	15178	16.6	22	SF		C	1915			H
MCMA	09	1928	1933	1938	N26	W26	.653	15172	7.9	10	SN		C	1933	15	.2	D
MCMA	09	2103	2108	2120	N17	E05	.400	15175	10.3	17	SB		C	2108	50	.6	E
MANI	10	0051	0107	0134D	N13	E46	.760		13.5	43D	SN		P		130	2.0	F
MONT	10	0753	0756	0807	S33	E82	.985		16.5	14	SN		C	0756	60		E
MONT	10	0830	0833	0845	N16	W01	.375		10.3	15	SN		C	0833	150		D
CATA	10	0835	0835	0845	N16	W02	.376		10.2	10	SB	2	C	0835	140	1.5	
MONT	10	0854	0857	0902	S34	E85	.991		16.7	8	SF		C	0857	20		D
CATA	10	0925	0930	0930D	N13	E47	.771		13.9	5D	SB	2	P	0930	56	.9	
MONT	10	1053	1055	1057D	S34	E83	.987		16.7	4D	SN		C	1055	60		
MONT	10	1150	1152	1158	S30	E85	.992		16.9	8	SF		C	1152	40		E
MONT	10	1200	1202	1213	N16	W03	.378		10.3	13	SF		C	1202	40		D
RAMY	10	1201	1202	1213	N17	W 1	.391		10.4	12	SB	3	C		29		F

Hα SOLAR FLARES

MARCH 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE MAR	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	10	1216	1218	1234	N26	W24	.637		8.7	18	SB	3	C		18		F
RAMY	10	1239	1242	1246	N26	W24	.637		8.7	7	SN	3	C		31		F
MCMA	10	1358	1407	1417D	N12	E39	.679	15176	13.5	19D	SN		C	1407	25	.3	D
RAMY	10	1505	1505	1517	S26	E78	.973		16.5	12	SN	3	C		14		
RAMY	10	1519	1522	1528	S31	E78	.973		16.5	9	SN	3	C		45		
RAMY	10	1637	1719	1749	S31	E77	.969		16.5	72	SB	2	C		33		
MCMA	10	1641	1643	1655	S33	E77	.970	15178	16.5	14	SB		C	1643	40	1.8	E
MCMA	10	1705	1715	1717D	S33	E77	.970	15178	16.5	12D	SN		C	1715	25	1.0	E
MCMA	10	1658	1700	1717D	N27	E60	.918	15179	15.2	19D	SF		C	1700	20	.7	E
MCMA	10	1915	1917	1920	S33	E76	.966	15178	16.5	5	SN		C	1917	30	1.2	E
MCMA	10	1915E	1926	1950	N13	W05	.336	15175	10.4	35D	SN		C	1926	30	.3	EL
PALE	10	1923E	1926U	1958D	N15	W 4	.364		10.5	35D	SN	3	C		40		F
MITK	10	2329	2330	2337	N26	W35	.727		8.4	8	SF		C	2330	110	1.7	
MITK	11	0409	0414	0450	N24	W38	.739	15172	8.3	41	1B		C	0414	220	3.4	E
MITK	11	0733	0737	0754	S33	E67	.924		16.3	21	SF		C	0737	70		E
CATA	11	0735	0740	0755	S34	E68	.930	15181	16.4	20	1B	2	C	0740	140		
RAMY	11	1153	1155	1237	S31	E67	.922		16.5	44	SN	3	C		22		
RAMY	11	1228	1229	1238	N15	W14	.424		10.5	10	SB	3	C		71		
RAMY	11	1301	1306	1320	N26	W44	.802		8.2	19	SB	3	C		67		
RAMY	11	1328	1332	1339	S31	E66	.917		16.5	11	SB	3	C		41		
RAMY	11	1356	1403	1410	S31	E66	.917		16.5	14	SN	3	C		50		
RAMY	11	1403	1404	1416	N20	W55	.866		7.5	13	SB	3	C		52		
RAMY	11	1628	1629	1636	N26	W46	.818		8.2	8	SB	3	C		30		
RAMY	11	1713	1715	1722	N14	E27	.550		13.7	9	SB	3	C		33		FDE
PALE	11	2136E	2142U	2151D	S31	E59	.870		16.3	15D	SN	3	C		42		F
PALE	11	2346E	2353	0002	S35	E70	.941		17.2	16D	SN	3	C		44		F
PALE	12	0151	0153	0207	S35	E69	.937		17.3	16	SN	3	C		39		F
PALE	12	0353	0355	0403	S35	E68	.932		17.3	10	SN	3	C		72		
RAMY	12	1235	1235	1237	N14	E17	.439		13.8	2	SN	3	C		24		
RAMY	12	1244	1245	1258	S33	E61	.888		17.1	14	SB	3	C		52		
RAMY	12	1421	1423	1527	S33	E61	.888		17.2	66	SB	3	C		63		
RAMY	12	1421	1510	1527	S33	E61	.888		17.2	66	SF	3	C		14		
RAMY	12	1519	1522	1525	N19	W76	.981		6.9	6	SN	3	C		16		
PALE	12	1813	1814	1815	S32	E57	.858		17.0	2	SN	3	C		22		
PALE	12	1815	1835	1838	S32	E57	.858		17.0	23	SN	3	C		19		
RAMY	12	1817E	1819	1821D	N14	E13	.402		13.7	4D	SN	3	C		31		
MCMA	12	1818	1819	1920	N20	E18	.520	15176	14.1	62	SN		C	1819	30	.4	E
RAMY	12	1931	1948	2013	N20	W81	.994		6.7	42	SN	3	C		21		FDE
RAMY	12	2103	2108	2114	S33	E57	.860		17.2	11	SB	3	C		23		
RAMY	12	2114	2115	2119	N15	W33	.626		10.4	5	SB	3	C		29		
PALE	13	0224	0225	0229	N25	W76	.984		7.4	5	SN	3	C		39		F
RAMY	13	1356	1402	1452	N25	W76	.984	15172	7.9	56	1B	3	C		0		FDE
RAMY	13	1659	1702	1720	N23	W84	.998		7.4	21	SB	3	C		0		F
RAMY	13	1906	1908	1920D	N13	W 7	.342		13.3	14D	SB	3	C		64		F H
MCMA	13	1907	1913	1923	N12	W06	.322	15176	13.3	16	SF		C	1913	50	.5	EL
PALE	13	1912	1916	1924	N11	W 8	.319		13.2	12	SN	3	C		34		F
RAMY	13	1915	1918	1925D	N22	W87	1.000		7.3	10D	SB	3	C		0		
PALE	13	2006E	2008U	2015D	N27	W81	.996		7.8	9D	SN	3	C		0		F
PALE	13	2328	2330	2340	N19	W48	.802		10.4	12	SN	3	C		25		F
MITK	13	2330	2333	2345	N20	W41	.741	15175	10.9	15	1F		C	2333	170	2.6	
PALE	14	0001	0003	0007	N25	W83	.998		7.8	6	SN	3	C		0		F
MANI	14	0340E	0340U	0343D	S27	E27	.550		16.2	3D	SB		V		120	1.4	F
CATA	14	0835	0835	0845	S38	E36	.719		17.1	10	SB	2	C	0835	112	1.6	
CATA	14	0850	0850	0905	N25	W90	1.001	15172	7.6	15	1F	2	C	0850	56		
RAMY	14	1422	1423	1428	N18	E79	.989		20.5	6	SF	3	C		0		
RAMY	14	1516	1517	1520D	N18	E78	.986		20.5	4D	SN	3	C		21		
MCMA	14	1555E		1557D	N18	E81	.993	15184	20.7	2D	SN		P	1557			D
RAMY	14	1655	1658	1703	N13	W17	.426		13.4	8	SN	3	C		18		
RAMY	14	1702	1704	1707	S30	E21	.520		16.3	5	SN	3	C		19		F
RAMY	14	1729	1729	1736	N18	E77	.983		20.5	7	SF	3	C		8		
RAMY	14	1744	1746	1804	N18	E77	.983		20.5	20	SF	3	C		13		
RAMY	14	1744	1752	1804	N18	E77	.983		20.5	20	SF	3	C		11		
RAMY	14	1834	1837	1854	N19	E75	.977		20.4	20	SN	3	C		54		FDE
PALE	14	1836	1838	1841	N17	E73	.968		20.3	5	SF	3	C		41		DE
RAMY	14	1934	1936	1940	N19	E74	.974		20.4	6	SN	3	C		51		F
MANI	15	0012E	0013	0022	N17	E76	.979		20.7	10D	SF		P		40	1.0	
MANI	15	0440	0442	0447	N16	E70	.954		20.4	7	SF		P		30	.7	F

Hα SOLAR FLARES

MARCH 1978

OBSERVATORY	OBSERVED UT: DATE MAR	START	MAX. PHASE	END	LOCATION: APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION — MIN.	IMPORTANCE	OBS. COND.	OBS. TYPE	MEASUREMENTS: TIME — UT	MEAS. AREA Mil of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	15	1235E	1246	1315	N19	W65	.931	15175	10.6	40D	1B	2	C		168		U F
RAMY	15	1235E	1246	1315	N19	E65	.931	15184	20.4	40D	1B	2	C		168		U F
RAMY	15	1703	1705	1714	S27	E 6	.377		16.2	11	SB	3	C		74		
PALE	15	2334	2340U	0030D	S31	E 4	.433		16.3	56D	SN	3	C		83		F
CATA	16	0755	0805	0915D	N21	W29	.628		14.2	80D	SN	2	P	0805	84	1.1	
RAMY	16	1834	1835	1850	S33	W 1	.461		16.7	16	SN	3	C		32		
RAMY	17	1150	1154	1230	N18	E42	.739		20.6	40	SN	2	C		98		
RAMY	17	1533	1550	1636	N18	E40	.718		20.6	63	SB	2	C		137		DE
RAMY	17	1533	1603	1636	N18	E40	.718		20.6	63	SN	2	C		98		DE
CATA	17	1540E	1550	1600D	N18	E38	.698	15185	20.5	20D	1B	2	P	1550	168	2.4	
PALE	18	0329	0330	0331D	N16	E32	.619		20.5	2D	SN	3	C		35		F
MITK	18	0337	0343	0349	N18	E31	.622		20.5	12	SN		C	0343	90	1.2	5
MANI	18	0340	0342	0401	N18	E30	.612	15184	20.4	21	1N		P		200	2.5	F
RAMY	18	1419	1421	1425	N18	E27	.580		20.6	6	SN	3	C		25		
MCMA	18	1420	1423	1428	S32	W28	.606	15178	16.5	8	SN		C	1423	30	.4	DH
RAMY	18	1434	1436	1452	N14	W64	.916		13.8	18	SN	3	C		22		
RAMY	18	1440	1443	1454	N18	E27	.580		20.6	14	SB	3	C		70		
MCMA	18	1440	1442	1452	N20	E25	.578	15184	20.5	12	SN		C	1442	40	.5	E
MCMA	18	1628	1630	1638	N20	E24	.569	15184	20.5	10	SF		C	1630	50	.6	E
RAMY	18	1628	1629	1636	N18	E26	.569		20.6	8	SB	3	C		62		FDE
RAMY	18	1801	1802	1808	N18	E25	.559		20.6	7	SN	3	C		46		DE
MANI	19	0437	0440	0459	N30	E12	.604	15183	20.1	22	1N		P		200	2.7	F
TEHR	19	0443E	0444U	0459	N31	E14	.625		20.2	16D	SB	1	C		190		U F
MANI	19	0456	0506	0527D	S29	W44	.741		15.9	31D	SF		P		110	1.6	F
RAMY	19	1328	1329	1346	S33	W33	.661		17.1	18	SN	2	C		19		
RAMY	19	1527	1531	1547	N14	W79	.987		13.7	20	SN	3	C		0		
RAMY	19	1714	1715	1715D	N17	E43	.743		22.9	1D	SN	3	C		20		F S
MCMA	19	1714	1717	1724	N17	E44	.753	15187	23.0	10	SF		C	1717	40	.6	EH
MANI	20	0653	0703	0736	N23	E59	.900	15188	24.7	43	1N		P		250	5.0	F
CATA	20	0710E	0710	0715D	N22	E59	.897	15188	24.7	5D	2B	2	P	0710	28	06.7	
MCMA	20	1630	1634	1645	N15	E90	1.000	15198	27.4	15	SF		C	1634			E
MANI	21	0021	0025	0027	N15	E85	.998		27.4	6	SF		P		40	1.2	
PALE	21	0023	0025	0027	N14	E77	.981		26.8	4	SF	3	C		0		
RAMY	21	1413	1414	1419	N14	E71	.956		26.9	6	SF	4	C		0		F
RAMY	21	1420	1421	1429	N19	E39	.711		24.5	9	SF	4	C		23		U F
RAMY	21	1528	1529	1545	N22	E42	.758		24.8	17	SN	3	C		20		U F
PALE	21	2009E	2019U	2026D	N14	E70	.951		27.1	17D	SN	3	C		17		DE
PALE	21	2204E	2204U	2206D	N17	W16	.457		20.7	2D	SB	3	C		135		F
PALE	22	0203	0205	0213	N17	W18	.474		20.7	10	SN	3	C		61		F
MANI	22	0435E	0435U	0441	S35	W61	.895		17.6	6D	SF		V		50	1.0	
MANI	22	0833E	0837	0904D	N23	E36	.707		25.1	31D	SF		V		100	1.5	F
RAMY	22	1246	1250	1259	S42	W40	.780		19.5	13	SF	2	C		30		F
RAMY	22	1310	1320	1349	N20	W25	.575		20.7	39	SN	3	C		94		U F
RAMY	22	1310	1315	1349	N20	W25	.575		20.7	39	SB	3	C		118		U F
RAMY	22	1312	1320	1325	S42	W40	.780		19.6	13	SF	3	C		19		F
MCMA	22	1357E		1436D	S42	W41	.787	15201	19.5	39D	SN		C	1409	40	.6	E
MCMA	22	1357E		1410	N22	W22	.567	15184	20.9	13D	SN		C	1358	30	.4	BD
MCMA	23	1454	1520	1610D	S42	W54	.870	15201	19.6	76D	SN		C	1520	40	.8	EK
MCMA	23	1605	1608	1612	S32	W87	.996	15178	17.1	7	SN		C	1608			D
MCMA	23	1624	1629	1635	S33	W85	.993	15178	17.3	11	SF		C	1629			D
MCMA	23	1719	1723	1728	S25	E81	.984	15205	29.8	9	SN		C	1723			E
MCMA	23	2012	2014	2025D	S32	W87	.996	15178	17.3	13D	SF		C	2014			D
MANI	24	2314E	2327	2344	N18	W59	.887	15184	20.5	30D	1N		P		190	3.8	FU
MANI	26	0820E	0822	0906D	N25	W46	.805		22.9	46D	SN		P		120	2.0	FE
CATA	26	0835E	0835	0840D	N22	W50	.826	15187	22.6	5D	1B	2	P	0835	168	3.1	
MANI	28	0037	0041	0050	N15	W16	.424		26.8	13	SN		P		150	1.7	
PALE	28	0039E	0039U	0039D	N14	W10	.358		27.3		SB	3	C		104		U F
MANI	28	0710	0714	0735	S28	E10	.428		29.0	25	SF		P		40	.4	
RAMY	28	1950	1951	1958	S30	W35	.666		26.2	8	SN	3	C		19		
CATA	29	0835E	0835	0900	S33	W45	.774		26.0	25D	SN	2	P	0835	112	1.7	

Hα SOLAR FLARES

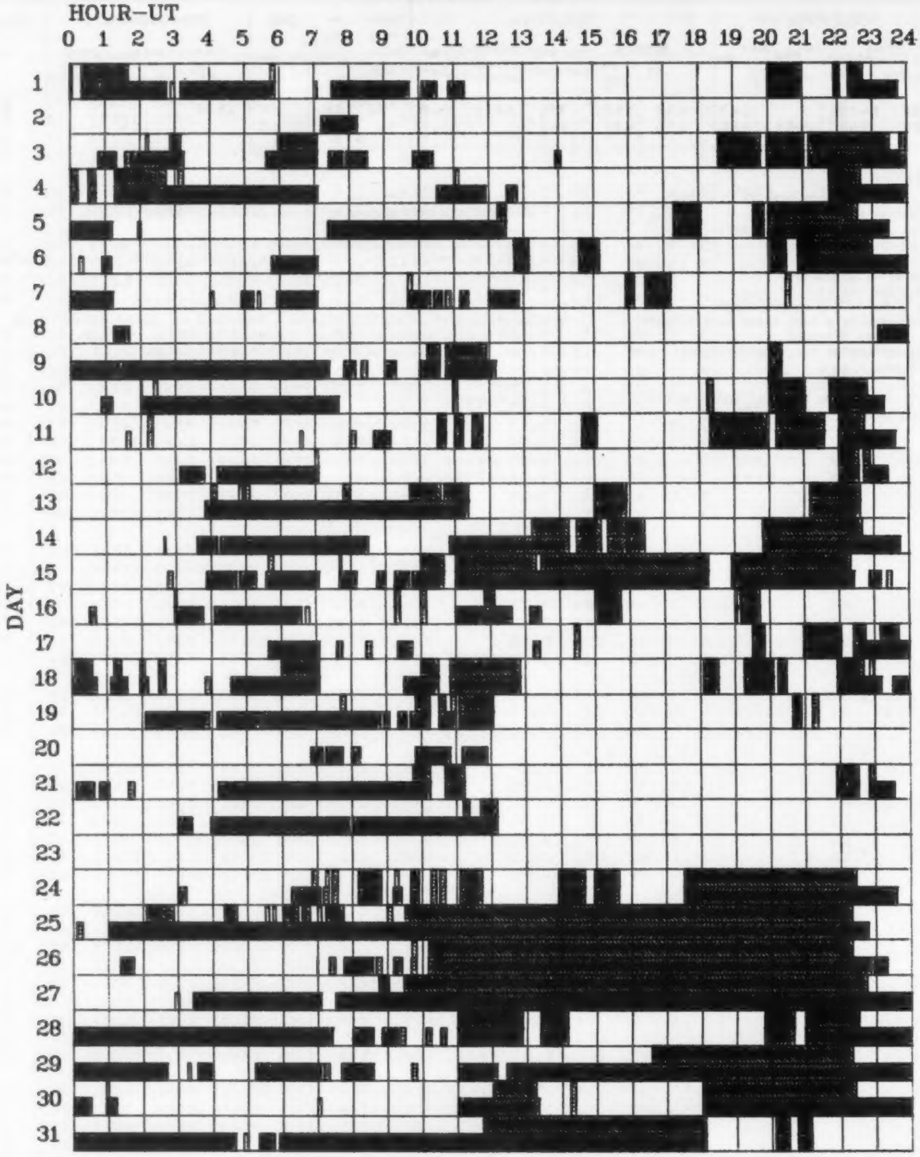
MARCH 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE MAR	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MCMA	30	1428E		1433D	N32	E80	.994	15220	6.6	5D	SN		P	1428			D
RAMY	30	2048	2051	2102	S26	W27	.556		28.8	14	SB	3	C		184		

"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE
MARCH 1978



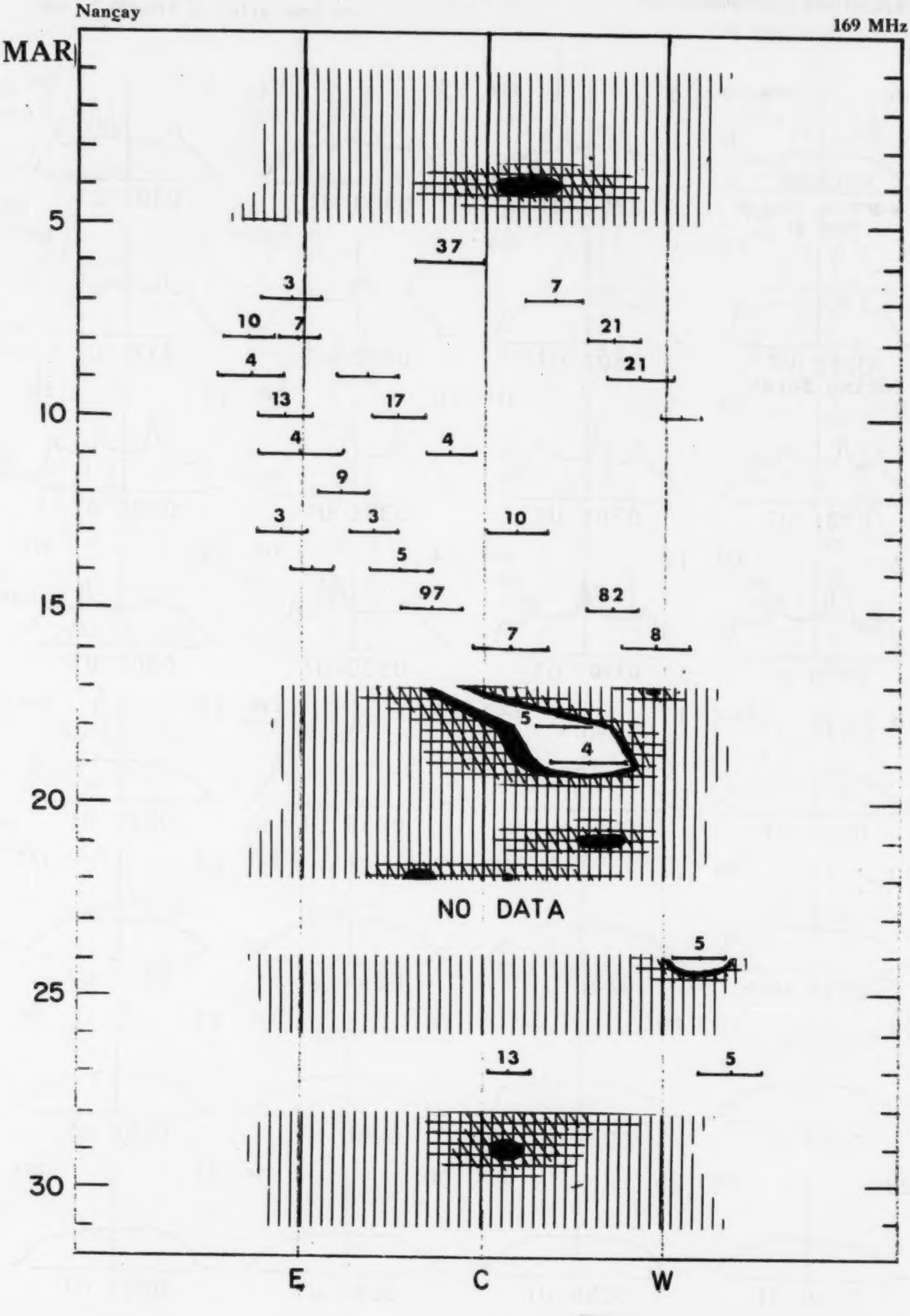
Observatories included in total patrol:

Bucharest	Istanboul	Manila	Monte Mario	Tehran
Catania	Kandilli	McMath-Hulbert	Palehua	Upice
Herstmonceux	Kodaikanal	Mitaka	Ramey	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

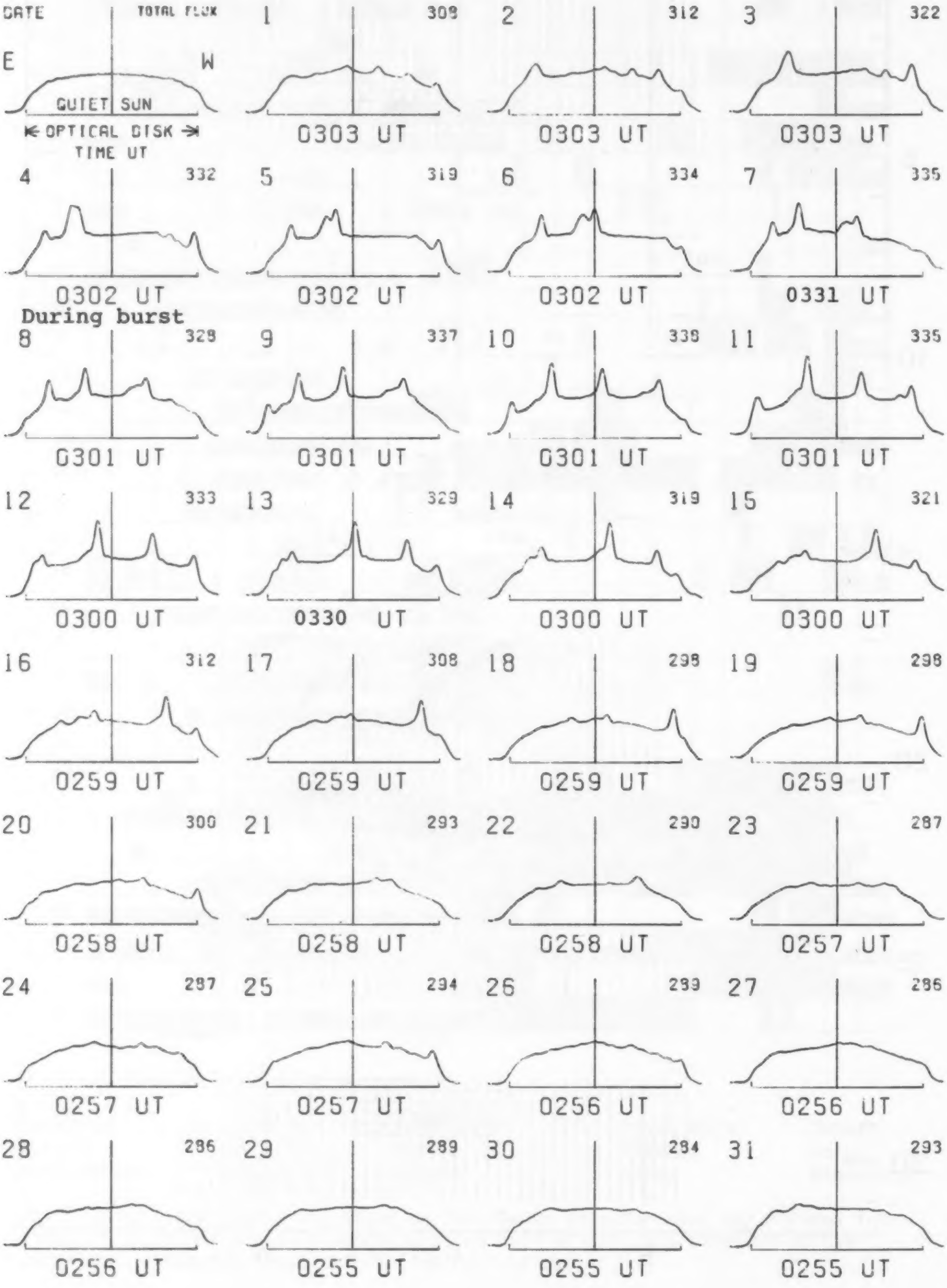
MARCH 1978



EAST-WEST SOLAR SCANS
MARCH 1978

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

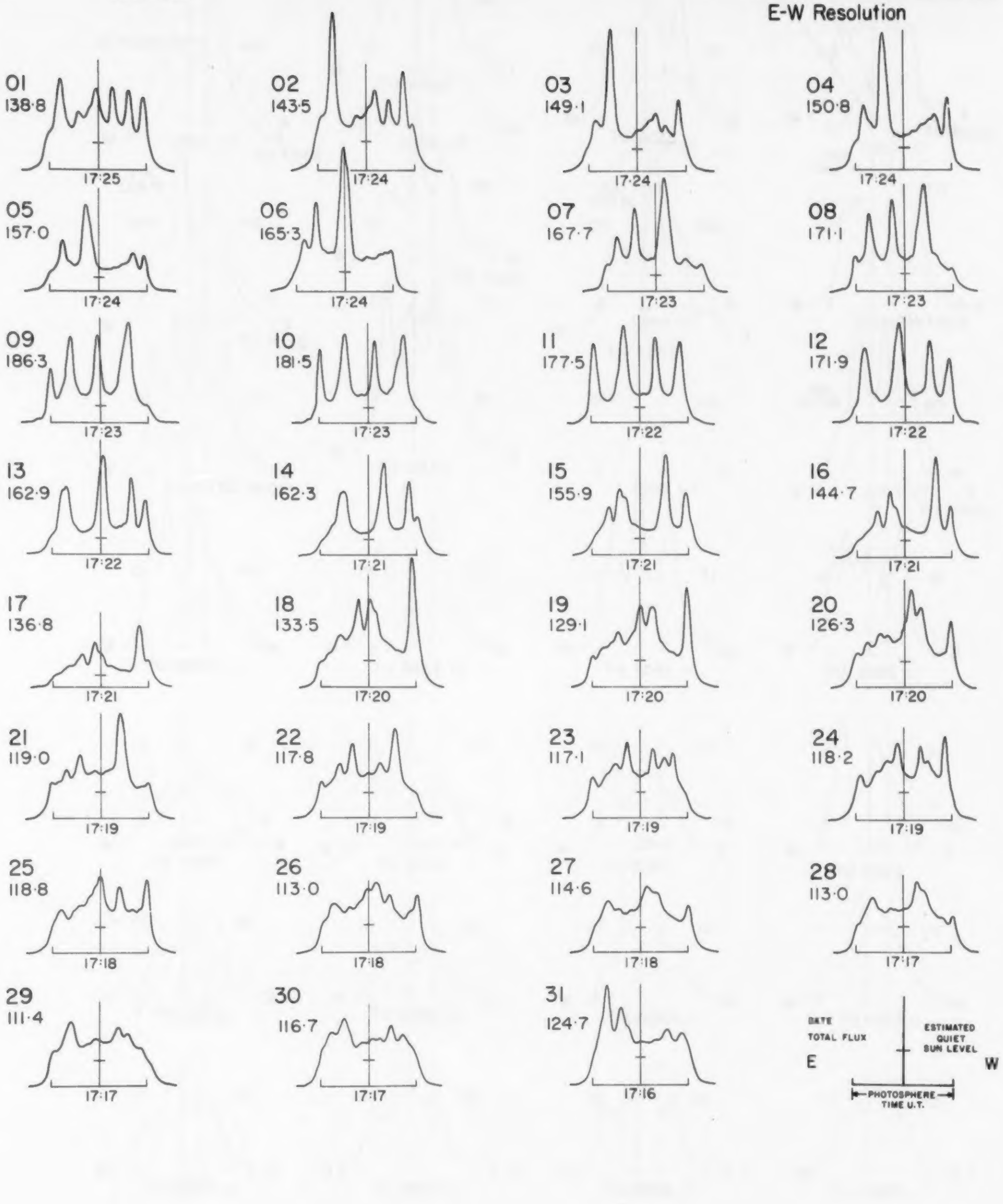


EAST-WEST SOLAR SCANS

MARCH 1978

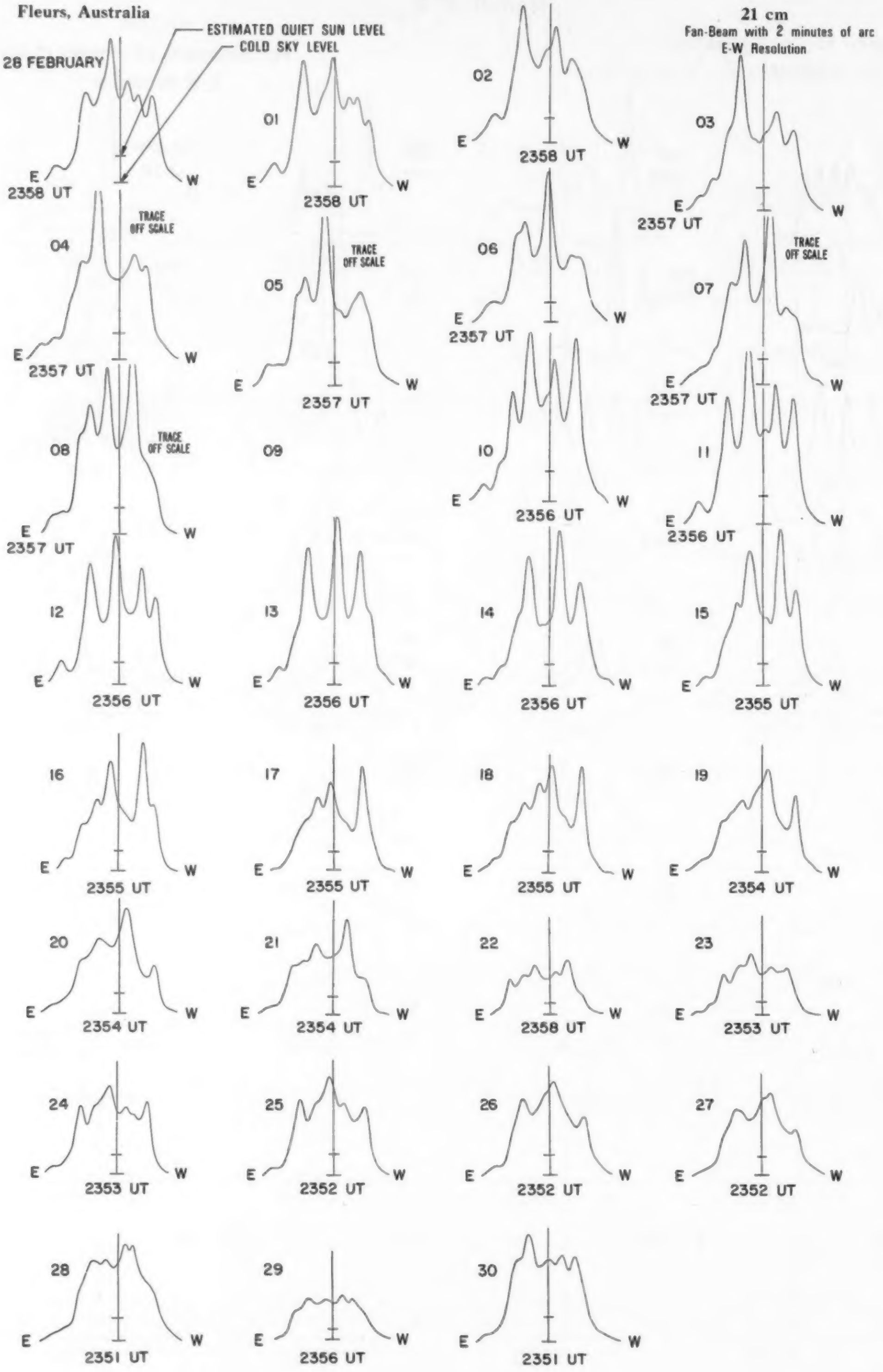
ALGONQUIN RADIO OBSERVATORY
CANADA

10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution



EAST-WEST SOLAR SCANS

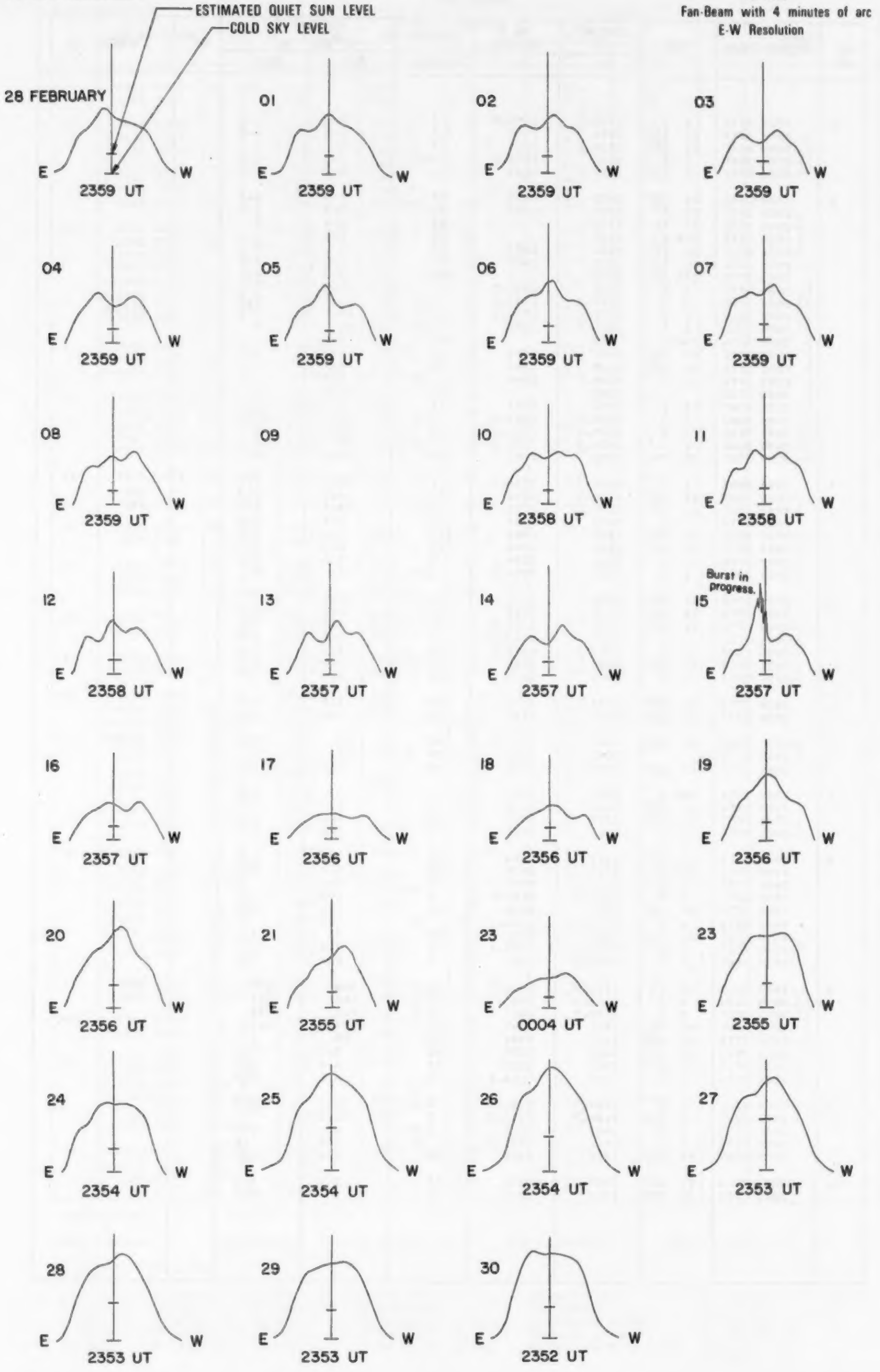
MARCH 1978



EAST-WEST SOLAR SCANS
MARCH 1978

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

MARCH 1978

MAR 1978	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22}Wm^{-2}Hz^{-1}$ PEAK	MEAN	INT	REMARKS
1	2800 OTTA	1 S	1555.2	1555.5	2	1.4	.7		
	2800 OTTA	23 GRF	1800	1930	240	4.6	2.3		
	2695 BOUL	23 GRF	1816.5	1819	13	5	2		
	2695 SGMR	1 S	1817	1818.9	3.7	3.6	1.4		
	2800 OTTA	2 S/F	1817	1819	4	2.8	1.4		
2	2800 OTTA	20 GRF	1625	1645	38	2.8	1.3		
	2800 OTTA	24 R	1715	1737	22	2.8	1.4		
	2800 OTTA	27 RF	1715		68	2.8	2		
	2800 OTTA	24P R	1737		31	2.8			
	2800 OTTA	26 FAL	1808	1823	15	-5	-3		
	2800 OTTA	24 R	1825	1905	40	7.4	3.7		
	2800 OTTA	27A RF	1825		325	7.4	6.7		
	2800 OTTA	3 S	1828	1830.5	7	14.8	7		
	8800 SGMR	3 S	1828.2	1830.9	5.8	41.4	16.5		BEFORE
	2695 SGMR	3 S	1828.3	1830.6	7.7	18.2	7.3		EVENT.
	2695 BOUL	3 S	1829.5	1831	5.5	13	4		
	2800 OTTA	24P R	1905		267	7.4			
	2800 OTTA	20 GRF	1907	1913	13	2.2	1.1		
	2800 OTTA	21 GRF	1938	1940	25	2.4			
	2800 OTTA	8 S	1944.8	1945	.8	4.2			
	2800 OTTA		2020		60	2.4			
	2695. PENT	40 F	2204	2211	15	1.8			
	2695 MANI	3 S	2328.5	2329.3	1.8	41.7	27.8		I
	2695 PENT	3 S	2328.9	2329.2	2	36	9		
	2695 BOUL	8 S	2329.5	2330.5	1.5	34	11		
	2695 PENT	26 FAL	2332	2350	18	-7.4	-2		
3	2695 MANI	3 S	0236.7	0237.3	1.9	10.8	7.2		
	2695 SGMR	20 GRF	1228.5	1243	53	6.5	3.3		SWF
	8800 SGMR	20 GRF	1238.3	1250.4	35.1	10.5	5.3		SWF
	2800 OTTA	1 S	1450	1452	4	2.8	1.2		
	2800 OTTA	21 GRF	1837	1940	170	7.6	3.8		
	2800 OTTA	20 GRF	1842	1846	30	4.8	2.4		
	2800 OTTA	1 S	2204	2204.1	2	6.4	2.2		
	2695 BOUL	8 S	2204	2204.5	1.5	6	2		
4	2800 OTTA	20 GRF	1230	1303	140 D	15.6			
	2800 OTTA	28 GRF	1705	1717	30	2.2	1.1		
	2800 OTTA	21 GRF	1740	1752.5	93	6.4	3.2		
	2800 OTTA	1 S	1743	1747.5	7	5.6	2.8		
	2695 SGMR	1 S	1743.5	1745.6	18	8.4	2.5		
	2800 OTTA	21 GRF	1937	2000	73	2.8	1.4		
	2800 OTTA	1 S	2025	2030	10	1.4	.7		
5	2800 OTTA	20 GRF	1620	1710	120	2.8	1.4		
	2800 OTTA	20 GRF	1825	1831	35	4.2	2.1		
6	2695 SGMR	20 GRF	1135	1204.5	82	79	47.4		2,CONT
	2800 OTTA		1210	1232	280 D	45			
	2800 OTTA	22 GRF	2028	2043	40	5.6	1.4		
7	2800 OTTA	240 R	1500	1507	7	3	1.5		
	2800 OTTA	20 GRF	2112	2116	30	2.2	1.1		
	2695 PENT	21 GRF	2318	2330	40	6.2	3.1		
	2695 PENT	1 S	2321	2324	8	7.6	2.8		
8	2800 OTTA	22 GRF	1410	1416	70	2.8	1.6		
	2800 OTTA	240 R	1715	1835	80	4.2	2.1		
	2800 OTTA	1 S	1853	1854	3	1.4	.7		
	2800 OTTA	1 S	2103.5	2104.5	2	1.4	.7		
	2800 OTTA	20 GRF	2134	2136	14	2.8	1.8		
	2800 OTTA	8 S	2204.7	2204.8	.2	2.8			
	2695 PENT	21 GRF	2300	2325	105	6	3		
	2695 PENT	1 S	2331.5	2332.1	2	4.6	2		
	2695 PENT	1 S	2358.5	2359	1	1.4	.7		
9	8800 SGMR	47 GB	1839.6	1840.7	31.2	800	240		SWF
	2695 SGMR	3 S	1839.6	1841.2	40.1	468	140		SWF
	2695 PENT	3 S	1839.8	1841	10.2	440	108		
	2695 BOUL	49 GB	1841	1842	11	473	164		
	2800 OTTA	29 PBI	1900	1900	55	22	4		
	2695 PENT	22 GRF	2005	2025	42	5.4	2.4		
	2800 OTTA	21 GRF	2053	2120	57	4.8	2.4		
	2800 OTTA	1 S	2113	2114.2	3	4.6	2.3		
10	2695 MANI	3 S	0103.9	0105.4	3.6	21.7	14.5		
	2695 PENT	4 S/F	0104.7	0105.5	2	18.2			
	2800 OTTA	1 S	1440	1441	3.5	3	2.2		
	2800 OTTA	8 S	1501	1501.2	.5	1.2	.6		
	2695 PENT	20 GRF	1918	1925	25	2.4	1.2		
11	2800 OTTA	20 GRF	1803	1810	40	2.4	1.2		
	2800 OTTA	22 GRF	1902	1916	45	5	2.2		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

MARCH 1978

MAR 1978	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	REMARKS
	2800 OTTA	20 GRF	2100	2135	60	2.4	1.2		
	2695 PENT	1 S	2352	2356	8	5.2	3		
12	8800 SGMR	3 S	1415.5	1422.1	8	14.6	5.8		
	2695 SGMR	3 S	1417.9	1422.3	6.1	10.5	4.2		
	2800 OTTA	1 S	1422.2	1422.5	1	5.8	2.9		
	2800 OTTA	29 PBI	1423.2	1423.2	8.8	1.8	1.6		
	2800 OTTA	1A S	1817	1819	6	3.6	1.6		
	2800 OTTA	8 S	1818.5	1818.5	.1E	33			
	2800 OTTA	20 GRF	2107	2109.5	20	3.8	1.6		
13	2800 OTTA		1355	1402	95	7.4			
	2800 OTTA	20 GRF	1723	1726	17	4.6	2.2		
	2800 OTTA	1A S	1905.5	1911	10	2.6	1.3		
	2800 OTTA	1 S	1906.5	1907	1.5	3	1.5		
	2800 OTTA	32A ABS	1920	1955	70	-3.8	-1.9		
	2800 OTTA	1 S	1955.5	1957	4	3	1.5		
	2695 PENT	21 GRF	2325	2335	30	6	3		
	2695 PENT	40 F	2330	2333	3	26			
14	2695 MANI	3 S	0339.8	0341.3	3.7	17.4	10.4		
	2695 SGMR	20 GRF	1207.9	1211.6	13	7.9	2.4		
	8800 SGMR	20 GRF	1208.7	1212.8	13.1	20.9	6.3		
15	2800 OTTA	22 GRF	1240	1255	45	3	2		
	2800 OTTA	20 GRF	1520	1525	25	2.2	1.1		
	2695 SGMR	3 S	1702.8	1703.3	1.9	15.1	6		5
	2800 OTTA	3 S	1702.9	1703.2	2	14	4		
	2695 PENT	20 GRF	2325	2355	80 D	4.6			
16	2800 OTTA	22 GRF	1820	1835	60	5.4	2.5		
17	2800 OTTA	22 GRF	1545	1600	35	2.4	1.2		
18	2800 OTTA	22 GRF	1425	1436	30	3.8	1.9		
	2695 BOUL	1 S	1816	1818	1.5	3	1		
19	2800 OTTA	20 GRF	1500	1505	25	1.6	.8		
	2800 OTTA	1 S	1953	1955	4	1	.5		
	2800 OTTA	20 GRF	2100	2105	30	1.6	.8		
20	2695 PENT	1 S	2320.5	2320.6	2	1.8	.9		
	2695 BOUL	3 S	2320.5	2321.5	2.5	3	1		
21	2800 OTTA	1 S	1834.5	1836.6	3.5	2.2	1.1		
	2800 OTTA	20 GRF	2158	2201	20	2.4	1.2		
22	2695 MANI	1 S	0420.6	0421	.9	7.4	3.7		
	2800 OTTA	24 R	1300	1313	13	1.6	.6		
	2800 OTTA	27F RF	1300		55	1.6	1.2		
	2800 OTTA	24P R	1313		34	1.6			
	2800 OTTA	26 FAL	1347	1355	8	-1.6	-0.7		
	2800 OTTA	20 GRF	1422		70 D	2			
	2800 OTTA	20 GRF	1810	1915	80	1.6	.8		
	2695 PENT	24 R	2235	2250	15	2	1		
	2695 PENT	27 RF	2235		105	2	1.6		
	2695 PENT	24P R	2250		64	2			
	2695 PENT	26 FAL	2354	2420	26	-2	-1		
24	2695 MANI	1 S	0824.2	0824.8	1.4	5.5	2.7		
	2800 OTTA	20 GRF	1330		60	2.4	1.2		
	2800 OTTA	24OAR	1500	1520	20	2.4	1.2		
	2800 OTTA	1 S	1518.2	1518.9	1	2.2	1.1		
	2800 OTTA	24 R	1710	1730	20	2	1		
	2800 OTTA	27 RF	1710		105	2	1.6		
	2800 OTTA	24P R	1730		66	2			
	2800 OTTA	26 FAL	1836	1855	19	-2	-1		
	2695 PENT	20 GRF	2310	2320	90	4.6	2.8		
27	2800 OTTA	20 GRF	1420	1426	17 D	1.4			
	2800 OTTA	240 R	1515	1605	50	2	1		
28	2800 OTTA	1 S	1949	1950.2	3	3.2	1.4		
	2695 BOUL	1 S	1950	1951	2	4	1		
30	2800 OTTA	24 R	1605	1612	7	1			
	2800 OTTA	27 RF	1605		59	1	.9		
	2800 OTTA	24P R	1612		43	1			
	2800 OTTA	26 FAL	1655	1704	9	-1	-0.5		
	2800 OTTA	20 GRF	2040	2052	30	.8	.4		
	2695 PENT	240 R	2305	2335	30	3.4	1.7		
31	2800 OTTA	24 R	1320	1350	30	2.2	1.1		
	2800 OTTA	27 RF	1320		340	2.2	1.5		
	2800 OTTA	24P R	1350		120	2.2			
	2800 OTTA	26 FAL	1550	1900	190	-2.2	-1.1		

Observatories:

BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SOLAR X-RAYS BY SATELLITE
SMS GOES
MARCH 1978

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
3/ 1	B	B	B	B	B	.004	.001	B	B	.001	B	B	B	B	B	.010	B	.001	.003	.002	.002	.001	.001	.003	.002
3/ 2	.002	.001	.002	.002	.002	.002	.001	.002	.001	B	B	.002	.001	.002	B	.001	.002	.002	.016	.006	.004	.007	.047	M	.005
3/ 3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	.004	.058	.002	B	.016
3/ 4	.028	.011	.014	.008	.002	.002	.001	B	.002	.002	.002	.002	.032	.037	.002	M	M	M	.003	B	B	B	B	B	.007
3/ 5	.002	.001	.001	.002	.001	M	.001	B	B	B	B	B	B	.001	B	B	B	.002	.001	B	.004	.001	B	B	.001
3/ 6	B	.003	.004	B	.001	M	B	.002	.001	.001	B	.031	.148	.070	.023	.012	.006	.011	.002	B	B	.001	.001	.001	.014
3/ 7	.002	B	B	B	B	M	B	B	B	B	B	.001	.001	B	B	B	B	.018	.005	1.31	.001	B	.004	.002	.058
3/ 8	.002	.002	B	B	.001	M	.004	.009	.002	.002	.002	.002	.002	.003	.009	.002	.001	.002	.002	.005	.001	B	B	.005	.003
3/ 9	.001	.001	.002	.002	.003	M	.007	.002	.005	B	.003	.003	.004	.001	B	.001	.001	B	.016	.002	.014	.002	.001	.001	.003
3/10	.001	.002	.004	.015	.005	M	.002	.003	.001	B	.019	.008	.002	.001	B	B	.001	.001	.001	.001	B	B	.004	.002	.003
3/11	.002	.001	.003	.003	.003	M	B	.001	.002	.002	.001	.002	.013	B	B	B	B	.001	.002	.515	.001	.002	B	.001	.024
3/12	B	B	B	B	B	M	B	B	B	B	B	B	B	B	.001	B	B	B	B	.001	B	B	B	B	B
3/13	B	B	.002	B	B	M	B	B	B	B	.001	B	B	B	.010	B	.001	.002	.045	.002	B	.001	B	.002	.003
3/14	.007	B	B	.009	.003	M	.002	.022	.035	.050	.026	.010	.005	.001	.001	.001	.002	.002	.002	.002	.002	.004	.007	.001	.009
3/15	B	.002	.001	.003	.002	M	.002	.002	B	B	.011	B	.009	.005	B	B	.002	.002	B	B	B	B	B	B	.002
3/16	B	B	B	B	B	M	.002	.003	.003	.001	B	B	B	B	B	B	B	B	B	.048	B	B	B	B	.003
3/17	B	B	B	.004	B	M	B	B	B	B	B	B	B	B	B	.004	B	B	B	B	B	.113	B	B	.006
3/18	B	B	B	.005	.002	M	.002	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/19	B	B	B	B	B	M	B	B	B	B	B	.002	.002	B	B	B	B	B	.002	.001	B	.019	B	B	.001
3/20	B	B	B	B	B	M	B	.003	B	B	B	B	B	B	B	.002	.002	.001	.001	.001	B	B	B	.001	B
3/21	.076	B	B	B	B	M	B	.002	.001	B	B	B	B	B	B	B	B	B	B	B	.002	B	.002	B	.004
3/22	.038	B	B	B	.008	M	B	B	B	B	B	.001	B	.004	B	B	B	B	B	B	B	B	B	B	.003
3/23	B	B	B	B	.001	M	B	B	B	B	M	B	B	M	B	B	B	B	B	B	B	B	B	B	B
3/24	B	B	B	B	B	M	B	.001	.002	B	B	B	B	B	B	B	B	.002	B	B	B	B	B	.009	B
3/25	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/26	.004	.004	B	B	B	M	B	B	.002	.001	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/27	B	B	B	B	B	M	B	B	B	B	M	M	M	M	B	B	.001	B	B	.250	B	.001	.004	.001	.013
3/28	B	.001	B	B	B	M	B	B	B	B	B	B	B	B	B	B	.002	.001	.001	B	B	.013	B	B	.001
3/29	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.101	B	B	B	.005
3/30	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.001	B	.002	.001	B
3/31	B	B	B	B	B	M	B	B	B	B	B	B	B	.002	.001	B	B	B	B	.367	B	B	B	.005	.016

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
MARCH 1978

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
3/ 1	.007	.008	.008	.006	.006	.007	.009	.008	.009	.010	.010	.009	.009	.008	.007	.009	.009	.009	.013	.012	.011	.010	.010	.011	.010
3/ 2	.012	.011	.011	.012	.013	.014	.011	.012	.011	.010	.010	.013	.012	.013	.012	.013	.015	.016	.033	.027	.021	.025	.065	M	.023
3/ 3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	.022	.011	.012	.008	.013
3/ 4	.031	.031	.029	.033	.013	.010	.010	.010	.011	.012	.014	.016	.048	.073	.019	M	M	M	.015	.010	.010	.009	.009	.008	.022
3/ 5	.010	.010	.010	.011	.009	M	.012	.010	.009	.009	.010	.010	.010	.012	.010	.010	.010	.011	.011	.010	.016	.011	.010	.010	.011
3/ 6	.011	.013	.021	.011	.011	M	.010	.013	.011	.011	.010	.043	.178	.113	.070	.043	.034	.031	.023	.017	.016	.015	.013	.013	.047
3/ 7	.013	.011	.011	.011	.010	M	.010	.010	.010	.010	.010	.012	.011	.010	.010	.010	.009	.017	.010	.020	.010	.010	.013	.011	.012
3/ 8	.011	.011	.010	.010	.011	M	.014	.022	.014	.015	.014	.013	.012	.014	.026	.015	.012	.012	.014	.021	.012	.010	.011	.019	.015
3/ 9	.013	.013	.014	.013	.020	M	.026	.020	.022	.016	.017	.018	.019	.015	.012	.013	.012	.011	.024	.015	.017	.014	.011	.011	.015
3/10	.012	.014	.015	.043	.027	M	.015	.016	.013	.011	.022	.021	.014	.012	.011	.011	.029	.011	.010	.011	.010	.010	.013	.011	.013
3/11	.009	.011	.018	.020	.019	M	.011	.011	.013	.013	.011	.013	.018	.011	.009	.009	.009	.010	.012	.079	.010	.011	.009	.010	.016
3/12	.009	.009	.009	.009	.008	M	.009	.009	.008	.008	.009	.009	.008	.007	.009	.008	.007	.008	.009	.010	.008	.009	.009	.009	.008
3/13	.008	.008	.011	.009	.008	M	.007	.007	.009	.010	.010	.010	.009	.008	.027	.017	.008	.012	.029	.013	.009	.009	.008	.010	.013
3/14	.020	.009	.009	.017	.013	M	.011	.038	.059	.089	.067	.037	.025	.016	.013	.012	.015	.016	.015	.014	.012	.015	.026	.015	.016
3/15	.011	.012	.010	.014	.011	M	.011	.012	.010	.010	.026	.010	.021	.019	.010	.009	.023	.013	.009	.008	.008	.007	.006	.007	.011
3/16	.008	.007	.008	.007	.007	M	.011	.013	.014	.012	.008	.007	.006	.005	.005	.006	.006	.006	.006	.010	.005	.005	.005	.005	.006
3/17	.004	.004	.004	.007	.004	M	.005	.005	.005	.005	.005	.005	.005	.004	.005	.010	.009	.006	.005	.005	.005	.049	.004	.004	.009
3/18	.005	.005	.005	.013	.010	M	.009	.005	.005	.005	.004	.006	.004	.004	.008	.005	.006	.006	.007	.006	.006	.006	.006	.005	.006
3/19	.005	.005	.004	.004	.005	M	.005	.004	.004	.004	.005	.009	.011	.009	.007	.006	.006	.006	.008	.008	.007	.006	.005	.005	.007
3/20	.005	.004	.004	.005	.005	M	.005	.010	.005	.008	.006	.005	.005	.005	.007	.010	.012	.010	.008	.007	.007	.007	.007	.009	.008
3/21	.216	.005	.006	.006	.005	M	.004	.006	.007	.007	.005	.005	.004	.005	.005	.004	.004	.004	.005	.005	.007	.005	.010	.005	.005
3/22	.096	.004	.006	.005	.013	M	.004	.004	.005	.004	.004	.005	.004	.013	.006	.004	.004	.004	.006	.005	.004	.004	.006	.005	.006
3/23	.004	.004	.004	.004	.007	M	.004	.004	.004	.004	M	.005	.004	M	.003	.003	.003	.004	.004	.004	.004	.004	.004	.004	.004
3/24	.004	.004	.004	.004	.004	M	.005	.007	.010	.005	.006	.005	.005	.004	.004	.005	.006	.010	.006	.005	.004	.004	.004	.020	.007
3/25	.007	.006	.006	.005	.005	M	.005	.004	.004	.004	.004	.005	.004	.005	.004	.004	.005	.004	.004	.004	.004	.004	.004	.003	.004
3/26	.011	.017	.007	.003	.003	M	.003	.003	.010	.010	.007	.005	.004	.003	.004	.003	.003	.004	.003	.003	.004	.003	.003	.003	.003
3/27	.004	.004	.004	.004	.004	M	.004	.004	.004	.005	M	M	M	M	.004	.004	.005	.005	.005	.030	.005	.005	.010	.008	.008
3/28	.006	.005	.004	.003	.005	M	.004	.004	.004	.004	.005	.004	.003	.004	.003	.003	.007	.007	.005	.004	.004	.003	.003	.003	.004
3/29	.002	.002	.003	.002	.003	M	.003	.003	.004	.003	.003	.002	.002	.002	.003	.004	.004	.005	.005	.005	.189	.004	.003	.003	.019
3/30	.003	.003	.003	.003	.003	M	.003	.003	.003	.003	.003	.004	.004	.006	.008	.008	.008	.008	.007	.007	.007	.006	.009	.009	.007
3/31	.007	.006	.006	.007	.006	M	.006	.006	.006	.005	.006	.006	.005	.009	.010	.007	.006	.005	.005	.070	.005	.006	.006	.014	.012

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

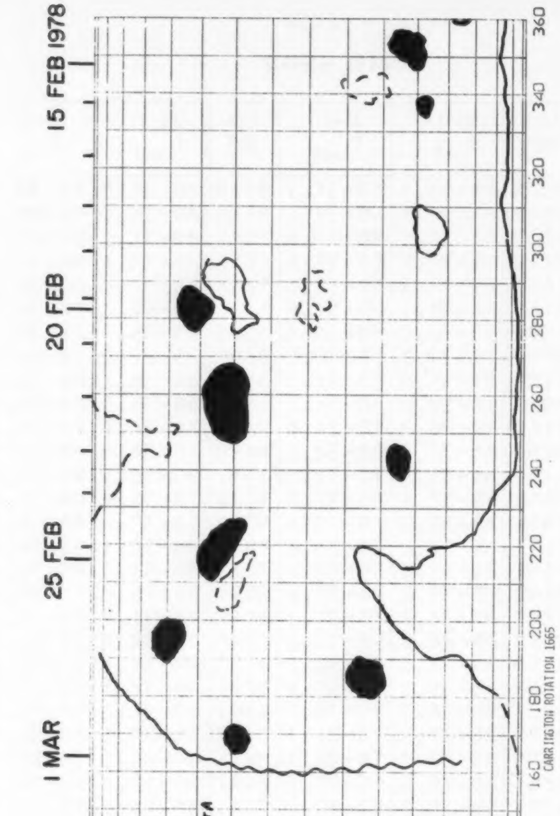
GOES

MARCH 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0503	8.6E-09	5.5E-08	0518	1.7E-07	1.6E-06	0520	5.1E-09	4.7E-08
1	2015	2.2E-08	1.2E-06	2018	3.8E-08	1.8E-06	2025	3.0E-08	1.5E-06
2	0325	1.1E-08	1.1E-06	0328	4.8E-08	1.8E-06	0338	2.3E-08	1.4E-06
2	0358	2.1E-08	1.2E-06	0403	8.7E-08	2.2E-06	0412	8.5E-09	1.6E-06
2	0530	1.4E-08	3.7E-07	0537	3.2E-08	1.8E-06	0633	1.2E-08	1.1E-06
2	1410	5.4E-09	1.1E-06	1413	4.7E-08	1.5E-06	1415	1.2E-08	1.2E-06
2	1523	1.6E-08	1.4E-06	1526	3.6E-08	2.2E-06	1528	2.5E-08	1.5E-06
2	1829	1.3E-07	2.7E-06	1835	5.3E-07	6.0E-06	1852	1.5E-07	4.3E-06
3	2202	1.2E-08	1.0E-06	2206	1.3E-07	2.7E-06	2211	3.1E-08	1.8E-06
4	0029	2.9E-08	1.3E-06	0054	1.3E-06	9.9E-06	0108	2.4E-07	5.5E-06
4	0233	3.9E-08	1.5E-06	0248	4.1E-07	6.3E-06	0319	1.0E-07	3.9E-06
4	0811	7.5E-09	9.6E-07	0814	3.5E-08	1.3E-06	0816	1.5E-08	1.1E-06
4	1747	4.3E-08	1.3E-06	1801	1.1E-07	2.6E-06	1814	2.5E-08	1.9E-06
5	0029	8.6E-09	9.2E-07	0034	6.7E-08	1.5E-06	0047	2.0E-08	1.2E-06
5	1257	4.5E-09	9.7E-07	1300	4.9E-08	2.0E-06	1307	2.2E-08	1.4E-06
5	1742	4.9E-08	1.3E-06	1745	5.6E-08	2.1E-06	1747	4.9E-08	1.5E-06
5	1830	1.4E-08	1.1E-06	1833	4.8E-08	1.9E-06	1837	3.3E-08	1.4E-06
5	1959	9.3E-09	1.0E-06	2002	6.9E-08	2.0E-06	2010	3.0E-08	1.5E-06
5	2019	1.7E-08	1.1E-06	2026	1.7E-07	3.3E-06	2032	2.9E-08	2.1E-06
6	0147	2.1E-08	1.2E-06	0200	1.3E-07	3.3E-06	0230	2.6E-08	2.1E-06
6	0707	9.3E-09	1.1E-06	0710	5.2E-08	2.1E-06	0714	3.5E-08	1.6E-06
6	0954	2.0E-08	1.2E-06	0957	4.7E-08	2.2E-06	0959	3.7E-08	1.4E-06
6	1125	2.2E-08	1.3E-06	1213	2.3E-06	2.3E-05	1258	8.7E-07	1.2E-05
8	0059	3.3E-08	1.5E-06	0103	1.1E-07	2.5E-06	0106	3.5E-08	1.9E-06
8	0648	2.3E-08	1.2E-06	0702	1.6E-07	2.6E-06	0751	2.9E-08	1.9E-06
8	1845	2.9E-08	1.4E-06	1849	3.7E-08	2.2E-06	1858	3.3E-08	1.8E-06
9	1201	1.7E-08	1.4E-06	1207	2.2E-07	3.7E-06	1214	6.4E-08	2.6E-06
9	1837	9.3E-09	1.1E-06	1843	1.6E-06	1.2E-05	1847	3.5E-07	6.5E-06
10	0104	2.0E-08	1.3E-06	0110	1.2E-07	2.9E-06	0116	2.7E-08	2.1E-06
10	0216	6.8E-09	1.0E-06	0219	5.3E-08	1.8E-06	0226	2.4E-08	1.4E-06
10	0752	1.7E-08	1.6E-06	0756	1.9E-07	3.3E-06	0759	5.4E-08	2.3E-06
10	1037	8.5E-09	1.1E-06	1053	2.1E-06	1.4E-05	1102	5.5E-07	7.5E-06
10	2211	1.8E-08	1.1E-06	2218	1.5E-07	3.2E-06	2220	6.2E-08	2.2E-06
11	0057	1.3E-07	1.3E-07	0416	1.0E-07	2.9E-06	0439	1.5E-08	1.3E-06
11	0542	1.5E-09	3.4E-07	0736	6.1E-08	2.2E-06	0743	1.7E-08	1.2E-06
12	1415	2.9E-09	7.3E-07	1422	6.1E-08	1.9E-06	1425	2.5E-08	1.2E-06
13	1356	9.3E-09	9.0E-07	1415	2.1E-07	3.8E-06	1447	4.6E-08	2.3E-06
13	2359	1.2E-08	1.1E-06	0022	1.5E-07	3.0E-06	0034	3.7E-08	2.0E-06
14	0337	6.5E-09	8.5E-07	0345	7.6E-07	7.8E-06	0349	1.5E-07	3.8E-06
15	0545	2.8E-09	5.5E-07	0552	1.5E-07	2.7E-06	0556	2.6E-08	1.6E-06
15	1002	2.3E-08	1.2E-06	1016	3.3E-07	5.1E-06	1032	1.0E-07	3.0E-06
15	1237	1.2E-08	1.1E-06	1253	3.2E-07	5.9E-06	1305	1.3E-07	3.5E-06
21	0739	2.9E-09	3.8E-07	0745	8.6E-08	1.2E-06	0800	1.3E-08	8.0E-07
21	0950	2.6E-09	5.8E-07	0955	4.1E-08	1.1E-06	1001	1.1E-08	8.5E-07
21	2159	9.8E-09	6.0E-07	2203	8.9E-08	2.1E-06	2212	3.9E-08	1.2E-06
22	0419	7.0E-09	4.5E-07	0425	4.2E-07	4.8E-06	0432	9.1E-08	2.2E-06
22	1144	1.5E-10	3.5E-07	1155	1.6E-07	2.4E-06	1158	5.4E-08	1.3E-06
22	1306	8.7E-09	6.1E-07	1318	8.7E-08	2.2E-06	1338	3.8E-08	1.4E-06
22	2243	6.7E-09	5.2E-07	2252	3.8E-08	1.2E-06	2258	1.2E-08	8.5E-07
24	0812	3.7E-08	1.2E-06	0815	5.8E-08	2.1E-06	0823	3.3E-08	1.6E-06
24	2313	7.5E-09	6.0E-07	2323	3.9E-07	5.0E-06	2337	7.9E-08	2.7E-06
26	0003	4.8E-09	4.1E-07	0055	1.2E-07	2.8E-06	0131	2.8E-08	1.6E-06
26	0542	0.0E+00	1.8E-07	0853	2.2E-08	1.3E-06	1012	6.2E-09	7.5E-07
28	0030	3.9E-09	4.5E-07	0038	2.4E-08	1.0E-06	0041	9.0E-09	6.9E-07

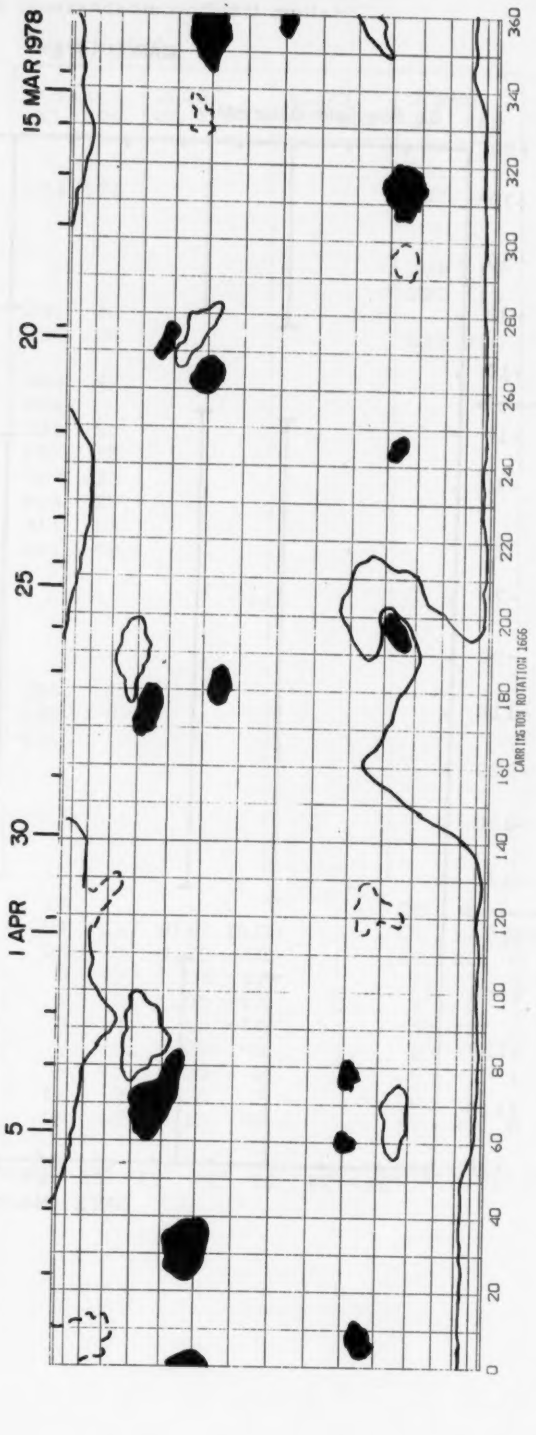
HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1665



HELIUM 10830Å SYNOPTIC MAPS

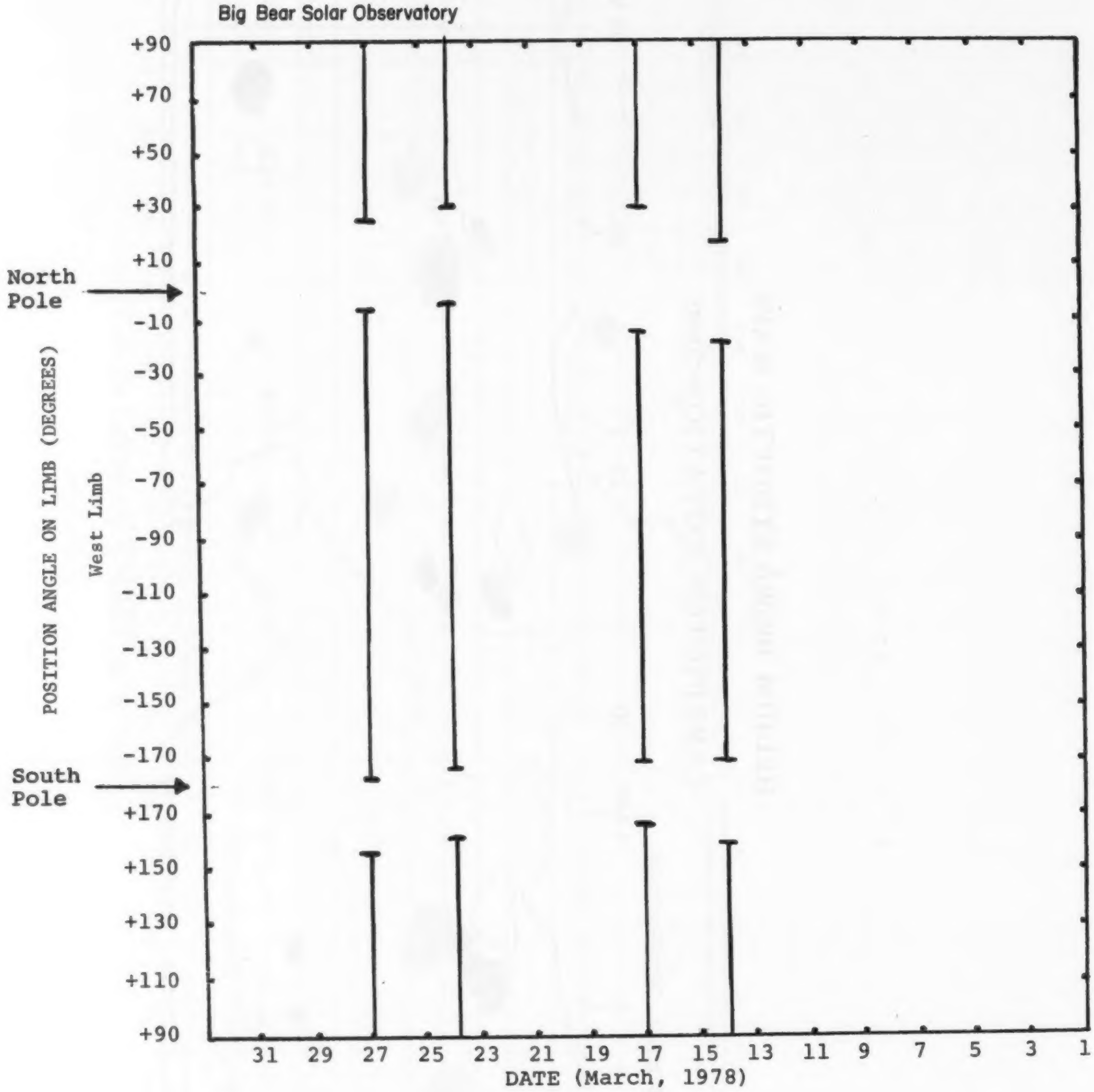
CARRINGTON ROTATION 1666



CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

MARCH 1978



SOLAR WIND

Interplanetary Scintillations

MARCH 1978

DAY	3C48		3C144		3C147		3C161		3C237		3C273		3C298		3C459	
	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR
1	427	16	554	5									431	75		
2	387	1	603	10			754	176					787	61		
3	363	43	478	5												
4	339	4	358	28												
5	394	7	318										397	14		
6	433	2	292	26									333	13		
7	830	16	349	2			341	42								
8			350	4	389	41	333	24					639	210		
9	601	7														
10	540	10	284	28			284	47								
11			296	13			324									
12	370	4	451	32			271	30								
13	354	*	413	14			257	18								
14	314	3	376	2			287	33								
15	293	13	465	10	544	15	434	37								
16	390	122	461	9			311	18								
17	310	44					221	48								
18	470	*														
19	361	*														
20	545	*														
21			278	32												
23	376	*														
24	365	9	457	46			324	6								
25	389	8	408	13	372	79	322	9								
26	432	18	502	31			436									
27	312	*														
28	444	*														
29	392	*														
30			531	40												
31			200	*												

MARCH	5				15				25			
	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON
3C48	23.	9.	0.80	-33.	22.	15.	0.70	-40.	22.	23.	0.59	-46.
3C144	3.	-7.	1.09	-16.	2.	-7.	1.04	-17.	1.	-7.	0.99	-17.
3C147	2.	0.	1.09	-14.	1.	0.	1.05	-15.	1.	0.	1.00	-16.
3C161	4.	-14.	1.13	-13.	3.	-14.	1.10	-14.	3.	-15.	1.05	-15.
3C237	8.	-8.	1.29	-3.	7.	-8.	1.28	-6.	6.	-7.	1.26	-8.
3C273	10.	-6.	1.28	5.	9.	-5.	1.30	2.	8.	-5.	1.30	0.
3C298	11.	-2.	1.22	9.	11.	-2.	1.25	7.	10.	-2.	1.27	5.
3C459	20.	49.	0.17	-66.	19.	60.	0.15	57.	19.	29.	0.27	67.

*Indicates data for which no error estimates are available since only two antennas were operating.

INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1961	DEC 29	. -	AT -	*	*	*			AT				*			*	A*		*	*			*					AT
1962	1977 JAN 25			-			-	-	TA -		A*			AT -			*	-			*	-				TA		
1963	FEB 21	AT	-	-	-	-	TA		TA			*									-			-				
1964	MAR 20		TA		AT					*			-	-						A*				-				
1965	APR 16			TA		TA -	AT	TA		TA		AT				-	-	TA		AT AT				TA				AT
1966	MAY 13	TA	-	-		TA			TA											AT	- -	AT T*	- T*				AT AT	-
1967	JUN 9								TA		-			TA						AT A*					AT *	A*		TA TA
1968	JUL 6										A*			T*	TA	TA		T*			AT			-	AT		-	
1969	AUG 2		TA						TA	-			TA	*								AT	TA					
1970	AUG 29			-	-	-		TA										AT	AT			AT	TA	TA -	AT	AT		
1971	SEP 25						-	-	-	-	-	-					TA				TA							
1972	OCT 22					-	AT														AT AT					*		
1973	NOV 18			TA	AT						-		AT							*			*		*			
1974	DEC 15				-	-	-		AT -		AT				AT	AT		AT		TA		TA		TA			*	
1975	1978 JAN 11		*	*					*		*	*						*			TA	-	AT			-		-
1976	FEB 7						*	TA				-			-						-		*			TA	A*	TA
1977	MAR 6	TA		-					AT			T*	*					TA			AT AT		AT	AT	*	TA		

▒ = definitely towards the sun ☐ = definitely away from the sun

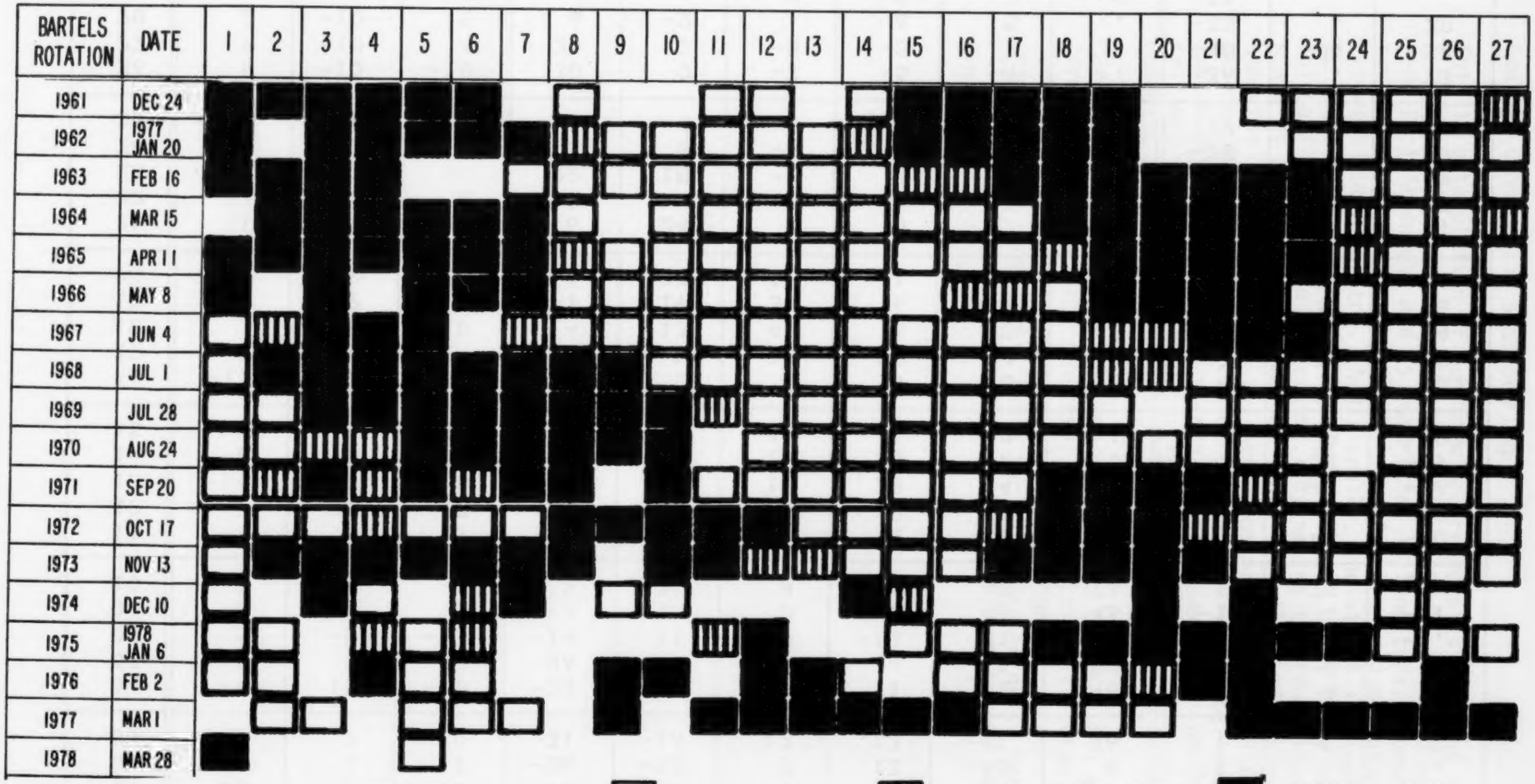
T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

Note: The Bartels Rotation numbers after Rotation number 1955 were incorrect in this Table in SGD issues 385 Part I through 389 Part I.

Errata: Thule data for December 5, 6, 10, 11, 12 and 19, 1976 have been corrected.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: [empty box] = FIELD >2μT, [striped box] = -2μT ≤FIELD ≤2μT, [filled box] = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

DAY	APRIL 1977	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN. 1978	FEB.	MARCH
01	-7	-13	13	2	-16	-9	9	6	-14	•	16	•
02	-17	-6	15	-12	-23	-13	6	1	-10	•	31	22
03	-16	-5	15	-18	-25	•	3	-14	-7	14	26	12
04	-12	1	13	-26	-23	3	13	-16	8	31	•	•
05	-9	7	0	-31	-16	12	13	-11	26	•	-5	8
06	-4	11	-19	-33	-5	18	11	-1	46	27	4	11
07	0	7	-32	-26	-1	22	-6	11	55	15	9	4
08	5	-5	-31	-14	11	17	-13	31	53	•	•	•
09	8	•	•	-7	25	8	-13	46	46	-1	•	-31
10	2	-22	0	3	20	4	-4	48	26	11	-28	•
11	-4	•	7	20	17	6	2	51	•	0	-43	-70
12	-7	-29	17	29	12	13	12	32	-2	•	•	-78
13	-14	-20	28	30	11	19	28	14	10	•	-41	-56
14	-8	-5	38	24	5	23	35	-4	•	•	-23	-49
15	-8	4	40	26	7	40	46	-10	1	•	3	-28
16	-11	12	31	18	•	•	39	-18	-6	0	•	-3
17	-9	20	24	13	5	38	20	-24	•	-3	31	18
18	1	29	18	4	13	41	6	-5	6	•	22	54
19	13	27	19	1	19	31	6	-11	8	•	37	48
20	18	19	16	-1	23	17	1	-12	•	18	22	24
21	21	12	10	6	24	2	3	•	•	39	-1	•
22	13	•	2	9	22	-3	7	-7	•	10	-18	-23
23	17	1	-2	22	18	-2	3	-4	-5	-4	-49	-49
24	9	-1	-7	25	8	-6	-3	0	-1	-15	•	-69
25	6	4	-15	31	4	-1	-9	2	•	-17	•	-79
26	9	-10	-10	30	0	-3	-5	4	•	-36	•	-73
27	7	-10	4	24	2	-8	-5	7	•	-48	-34	-53
28	2	-10	15	6	-2	•	-6	5	•	-33	•	-28
29	-10	-4	19	4	-6	-8	5	-2	-9	-15		•
30	-11	3	14	-4	-6	3	6	-11	•	14		•
31		6		-10	-11		8		-20	10		•

Dot symbol entry indicates no data available for the day.

Boulder Geomagnetic Substorm Log

This is a tabulation of substorm occurrences as observed in Boulder. A substorm is a localized geomagnetic disturbance which usually occurs near local midnight and is restricted in longitude. However, the current systems developed during a substorm affect ground magnetometers in the entire nightime sector. Additionally, individual substorms may occur at local times, away from midnight, and may be as large as 24 hours (global) in longitudinal extent. By noting the time, location and scale of a substorm, one may estimate the effect of a substorm at a specific location. Among the many substorm effects are ionospheric effects (which influence radio communications) and telluric effects (which may disturb long distance electric power and communications systems). The familiar aurora is a visible manifestation of the geomagnetic substorm.

Currently, the Log provides the date, onset time (in UT) and direction (from Boulder) of each substorm. The direction is listed as "East", "West" or "Centered" (over Boulder). The comment section further describes the geomagnetic field for a particular day. Future issues will carry additional descriptive text, as the substorm analysis broadens in scope.

BOULDER GEOMAGNETIC SUBSTORM LOG

MARCH 1978

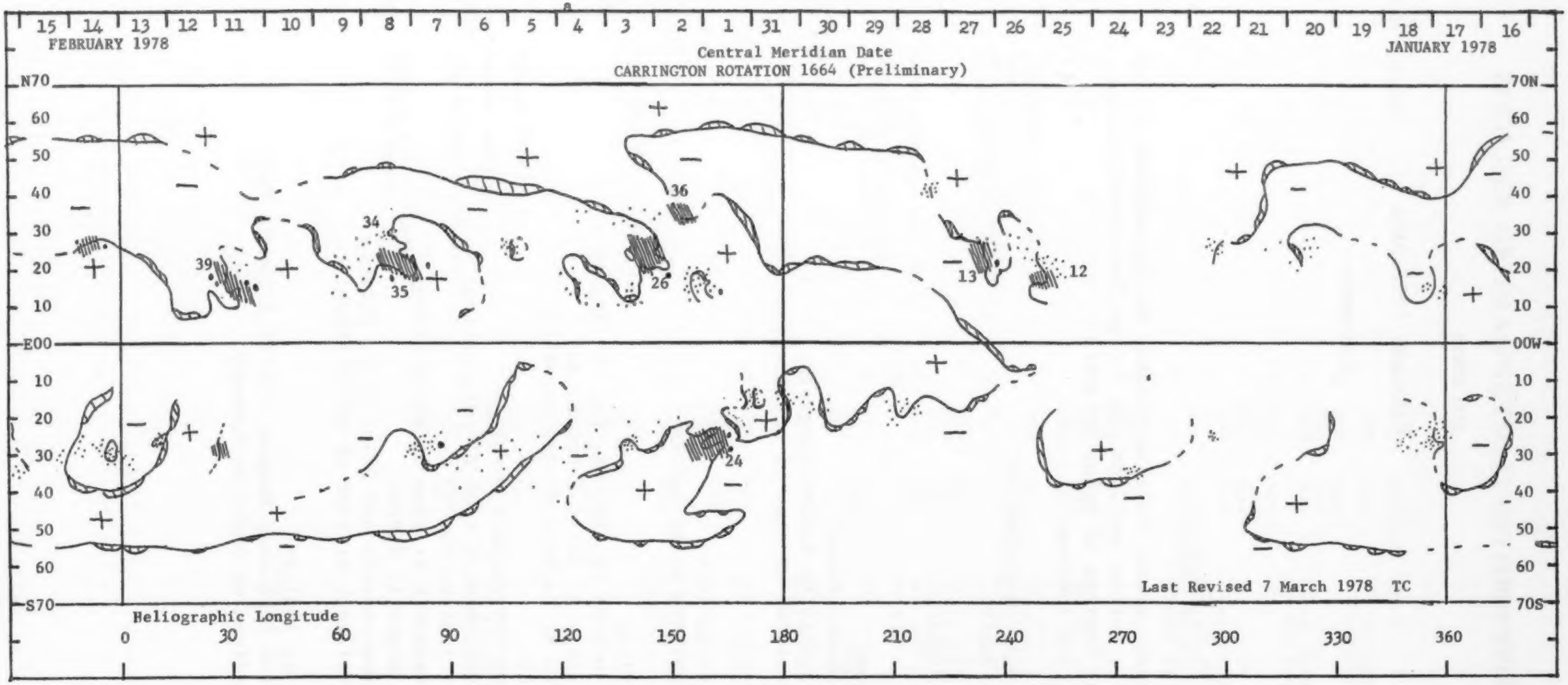
DATE	TIME OF ONSET	DIRECTION	COMMENTS
1	0110	East	
	0245	East	
	0845	West	
	1330	West	
	1605	West	
2	0020	East	
	0050	East	
	0205	East	
	0410	East	
	0445	East	
	0500	East	
	0550	East	
	0615	East	
	0655	East	
	0715	East	Electrojet near Boulder 0715-1000
	0805	East	
	0925	East	
	1000	East	
3	0000	East	
	0110	East	
	0150	East	
	0530	East	Substorm lasted until 0630
4			Quiet day
5			General disturbance 0900-1900 UT; no distinct onsets
6	1125	West	
7	0520	East	
	1320	West	
8	1440	ssc	Global disturbance until 2200 UT
9	0315	East	
	0910	West	Substorm lasted until 1100
10	0705		Global disturbance until 1525 UT
11	0940	West	
12			Quiet day
13	0410	East	
	0540	East	
	0710	East	
	0850	Near center	
	1030	West	
14	0230	East	
	0600	Near center	
	1035	West	
	1215	West	
15	0115	East	
	0415	East	Moderate intensity
	0810	East	
	0930	Near center	
	2335	East	
16	0055	East	
	0325	East	
	0400	East	Moderate intensity
	0505	East	
	0620	East	Moderate intensity
	0715	Near center	
			1330-1840 General disturbance
	2305	East	
17	0040	East	
	0225	East	Series of substorms through 0540
	0725	Centered	Moderately intense
	1415	West	Substorm intense through 1700, entire north American sector affected
18	0105	East	
	0230	East	
	0850	West	Auroral stations have series of substorms through 1800
19	0120	East	
	0215	East	
	0330	East	
	1140	West	Auroral stations have series of substorms through 1730
	1400	West	
20			Low level activity, no distinct onsets
21	0230	East	
	0500	East	
	0825	West	
22	0410	East	1st onset of double onset SS - weak
	0500	East	2nd onset of double onset SS - major
	0900	Centered	Central meridian passed over Boulder from west to east
	2210	East	Boulder on dayside; Alaska chain shows high latitude disturbance
23	0015	East	Boulder sees partial ring current enhancement
	0500	East	1st of double onset SS - weak
	0530	East	2nd of double onset SS - major
	1055	West	Continuous activity until 1600 UT
24	0555	East	Very weak; Boulder sees D perturbation only
25			Quiet day
26	0315	East	Boulder sees partial ring current injection
	0645	Centered	
	1335		SSC - Mag storm begins; persists through end of day
27			Mag storm continues through approximately 2000 UT
28	0145	East	1st of double-onset SS - weak
	0250	East	2nd of double-onset SS - major
	0745	West	
			1310-1645 - Auroral zone activity west; Boulder disturbed, no distinct onset
29	0645	West	1st of multiple onset SS lasting to approximately 1700 UT
	0845	West	
	1045	West	
	1250	West	
	1600	West	
30	0245	East	
	0340	East	
	0505	East	
	0610	East	
	0735	Centered	Boulder crossed central meridian
	0815	West	Multiple onsets continue until 1725 UT
31	1100	West	1st of series of 4 SS detected network-wide
	1300	West	
	1410	West	
	1455	West	Auroral zone disturbance continued until 1650

FEBRUARY 1978 DATA

Contents

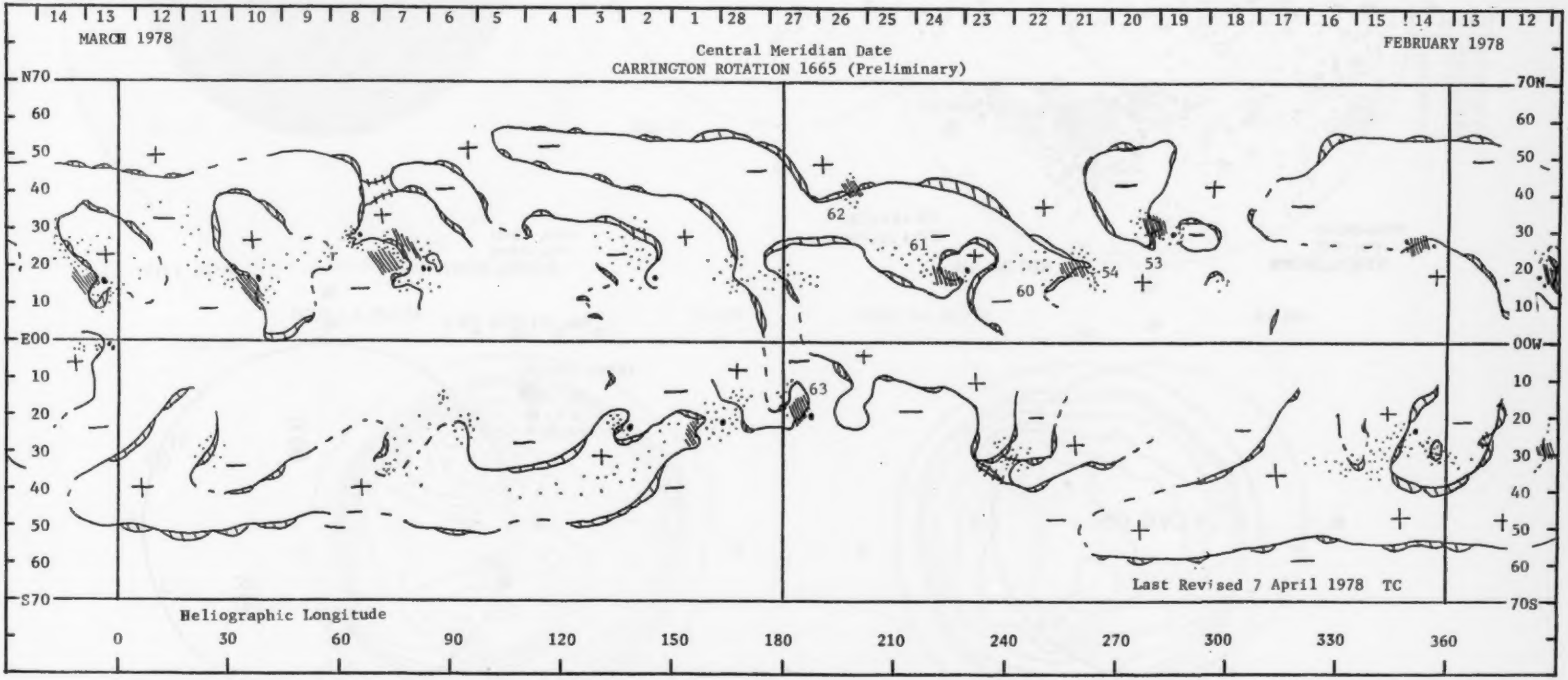
	Page
Daily Solar Activity Center	
Hα Synoptic Chart	38-39
X-ray, Magnetograms, Calcium Plages, Hα Filtergrams, Sunspots, Corona and 2 cm and 8.6 mm Spectroheliograms	40-95
Individual Regions of Solar Activity	96-104
Daily Calcium Indices	104
Sudden Ionospheric Disturbances	
Table of Events	105-107
Solar X-Ray Radiation	
Solrad 11	108-121
Solar Radio Waves	
Spectral Observations	122-133
Selected Events by Radioheliograph (not received at time of publication)	
Cosmic Rays	
Chart of Variations	134-137
Neutron Monitors Daily Values	138
Geomagnetic Indices	
Table of Indices Kp, Kn, Ks, Km, Cp, Ap, aa	139
12-Month Table of Daily Averages Ap	140
Chart of Kp by Bartels 27-day Rotation	141
Chart of C9	142
Chart of Dst by Bartels Rotation (not available at time of publication)	
Equatorial Indices Dst (not available at time of publication)	
Principal Magnetic Storms	143
Sudden Commencements and Solar Flare Effects (not available at time of publication)	
Radio Propagation Indices	
Transmission Frequency Ranges - North Atlantic Path	144-145
Quality Indices on Paths to Germany	146

Hα SYNOPTIC CHART
JANUARY - FEBRUARY 1978



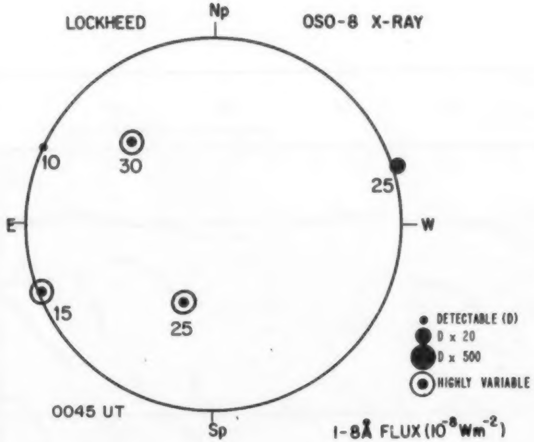
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1665 (PRELIMINARY)



FEBRUARY 1, 1978 (P =-12.07, B_o =-6.03, L_o =172.12)

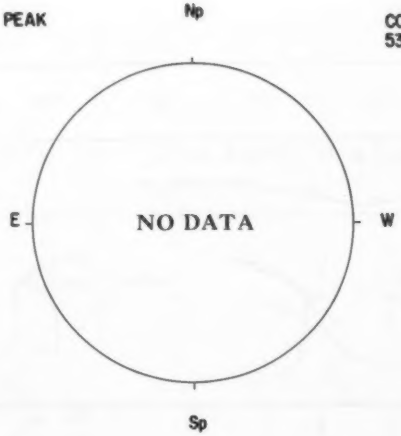
LOCKHEED — OSO-8 X-RAY



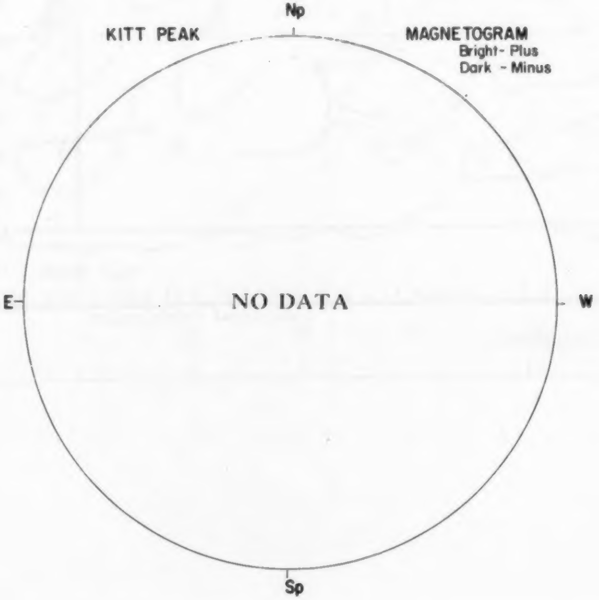
0045 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å

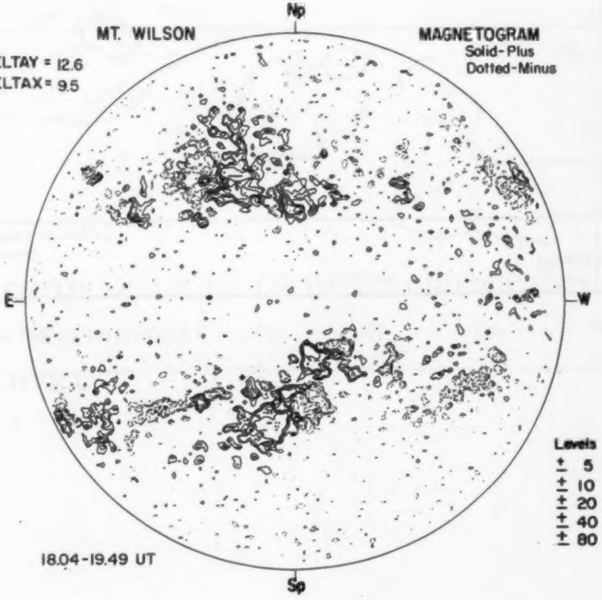


KITT PEAK — MAGNETOGRAM
Bright- Plus
Dark - Minus



MT. WILSON — MAGNETOGRAM
Solid-Plus
Dotted-Minus

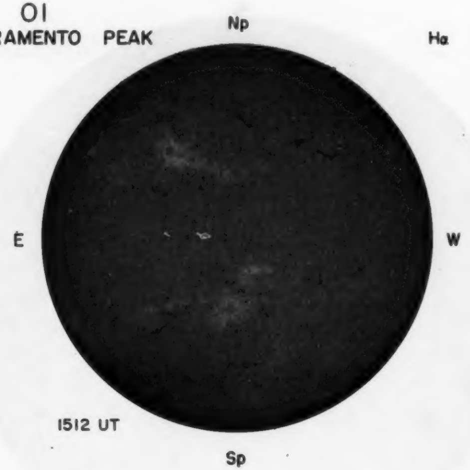
DELTAY = 12.6
DELTAX = 9.5



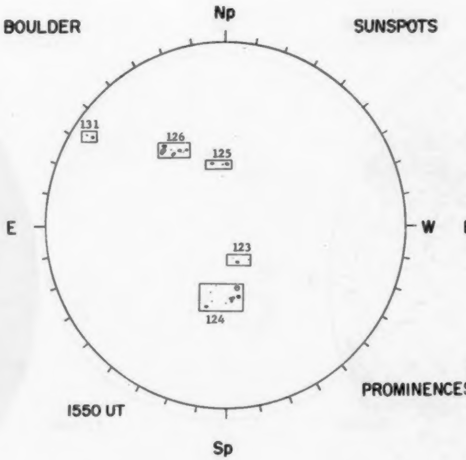
18.04-19.49 UT

01

SACRAMENTO PEAK Hα

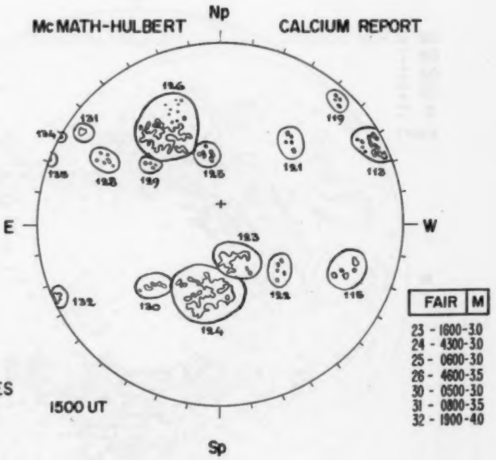


BOULDER SUNSPOTS

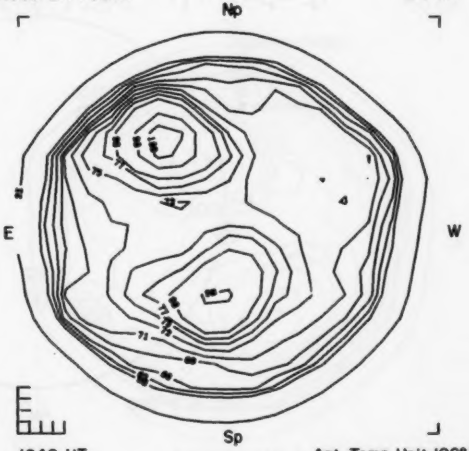


PROMINENCES

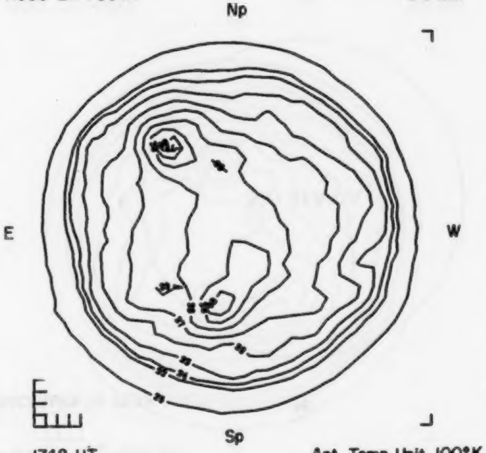
McMATH-HULBERT CALCIUM REPORT



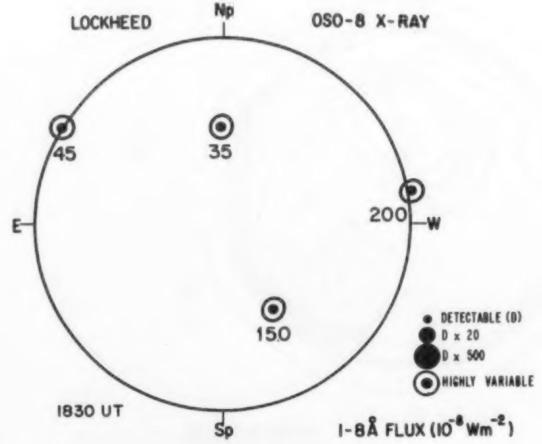
NOSC LA POSTA 2.0 CM

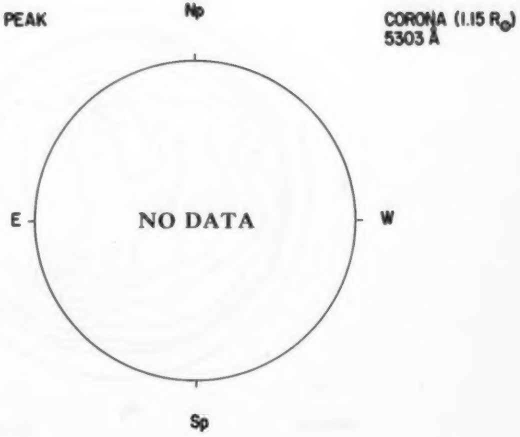


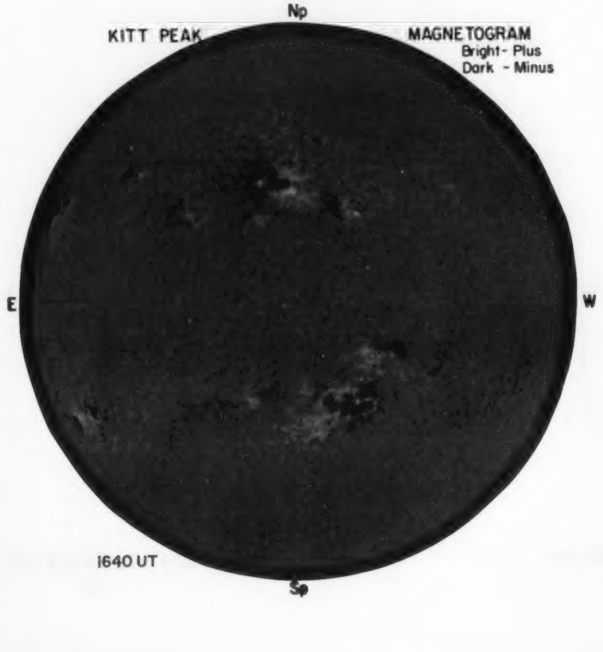
NOSC LA POSTA 8.6 MM

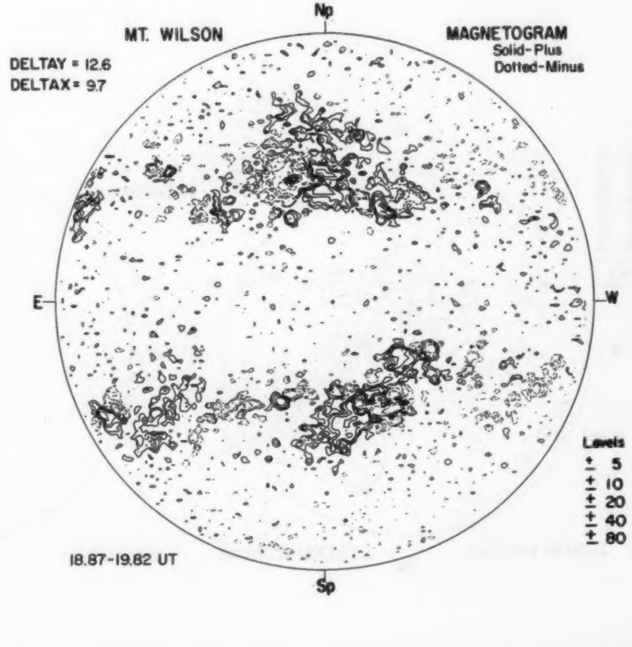


FEBRUARY 2, 1978 (P =-12.48, B_0 =-6.10, L_0 =158.95)



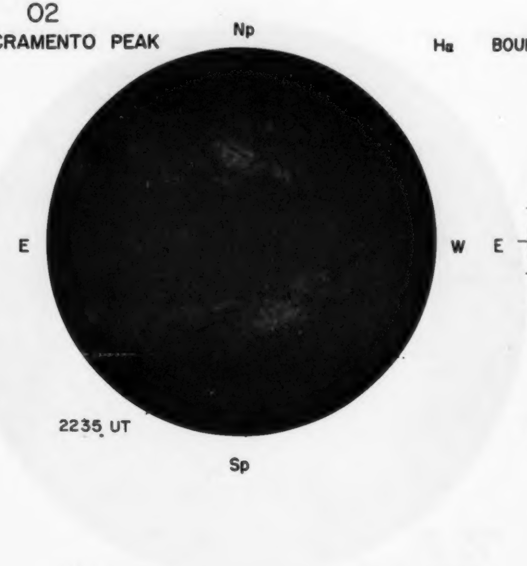




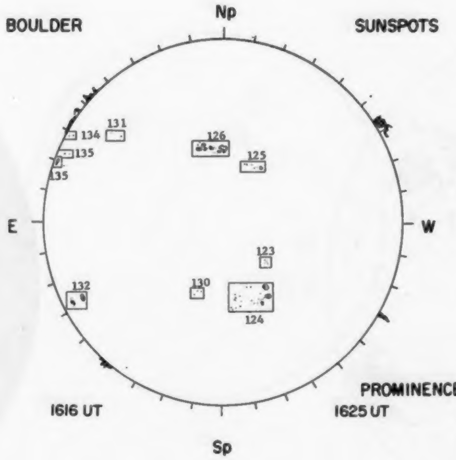


02

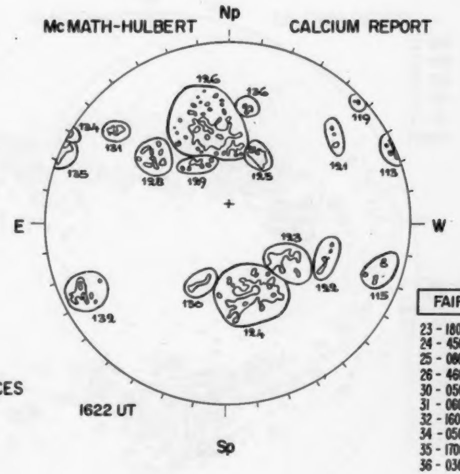
SACRAMENTO PEAK Hα



BOULDER SUNSPOTS PROMINENCES

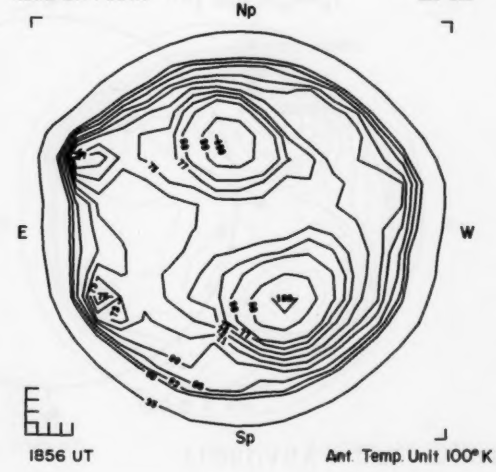


McMATH-HULBERT CALCIUM REPORT

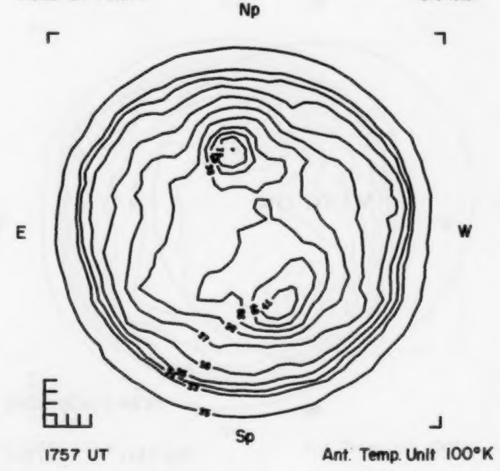


FAIR	S
23 - 1800 - 30	
24 - 4500 - 30	
25 - 0800 - 25	
26 - 4600 - 35	
30 - 0500 - 30	
31 - 0600 - 30	
32 - 1600 - 35	
34 - 0500 - 35	
35 - 1700 - 35	
36 - 0300 - 25	

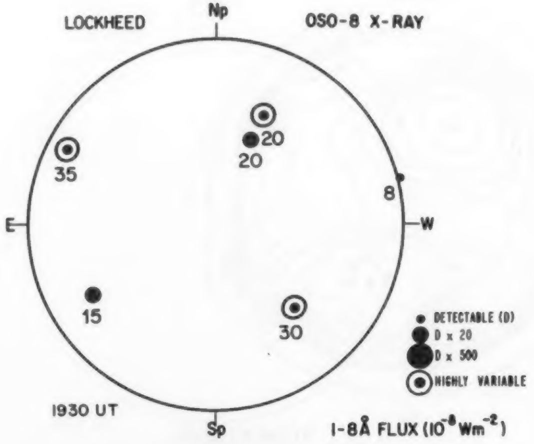
NOSC LA POSTA 2.0 CM

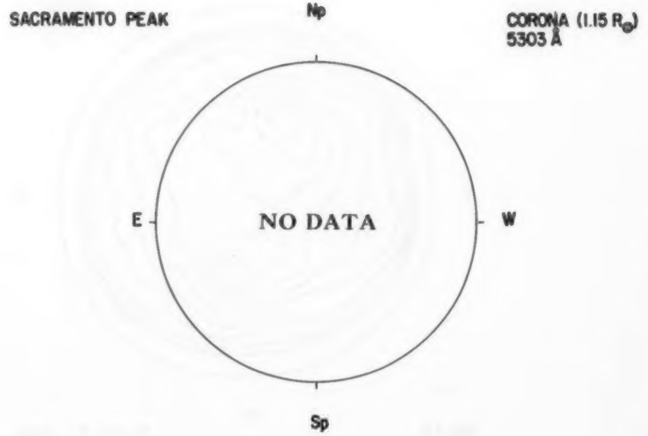


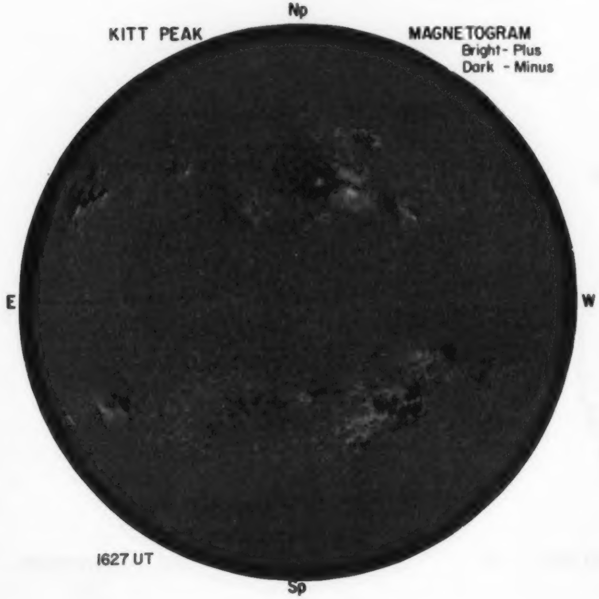
NOSC LA POSTA 8.6 MM

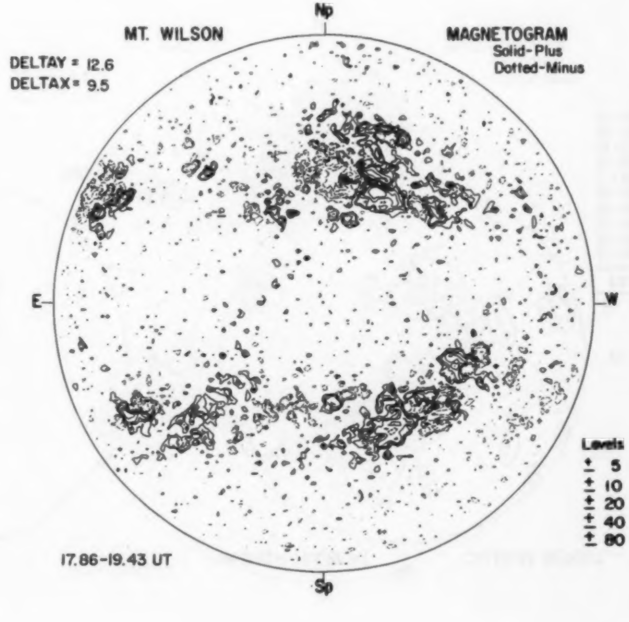


FEBRUARY 3, 1978 (P =-12.88, B_0 =-6.17, L_0 =145.79)

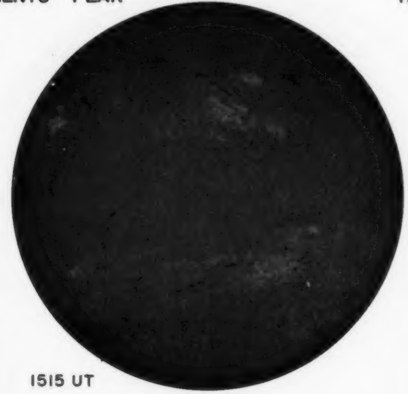




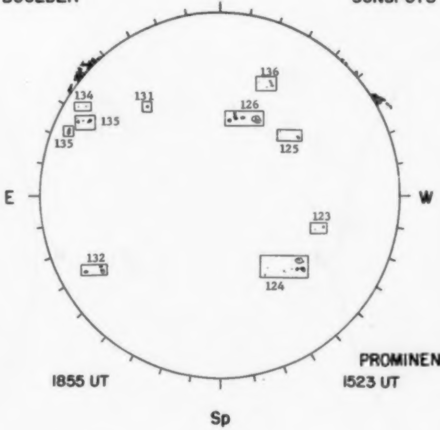




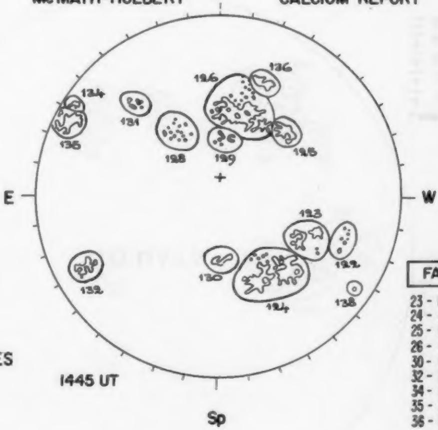
03
SACRAMENTO PEAK



Hα BOULDER SUNSPOTS

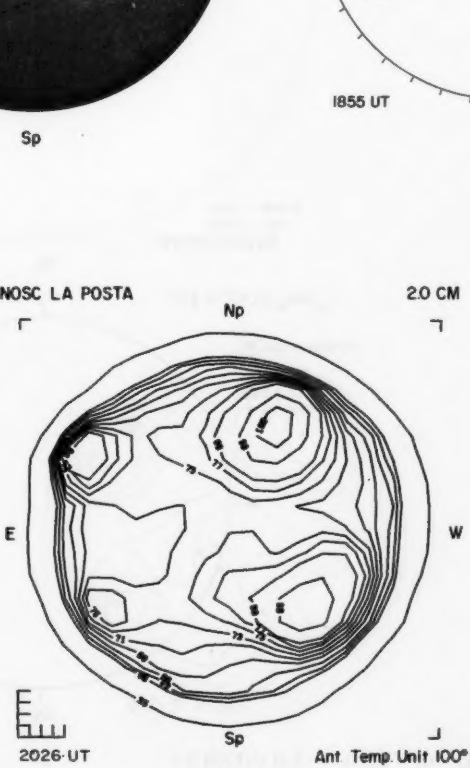


McMATH-HULBERT CALCIUM REPORT

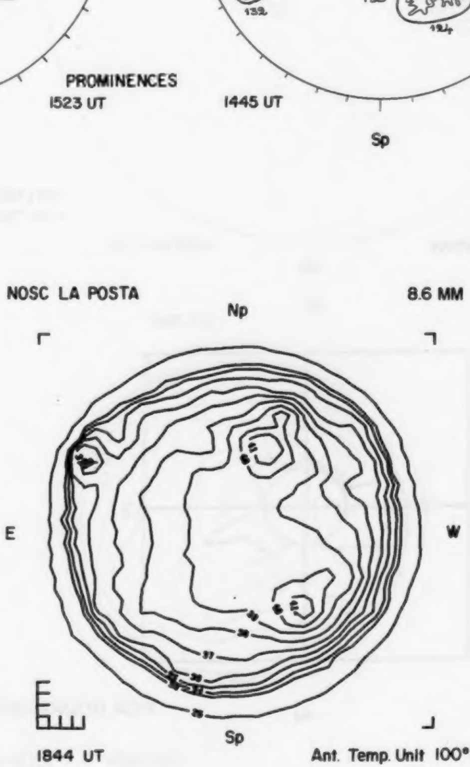


FAIR	M
23 -	1500-30
24 -	4300-30
25 -	0900-25
26 -	4300-35
30 -	0400-30
32 -	1600-35
34 -	0700-35
35 -	2800-35
36 -	1000-40

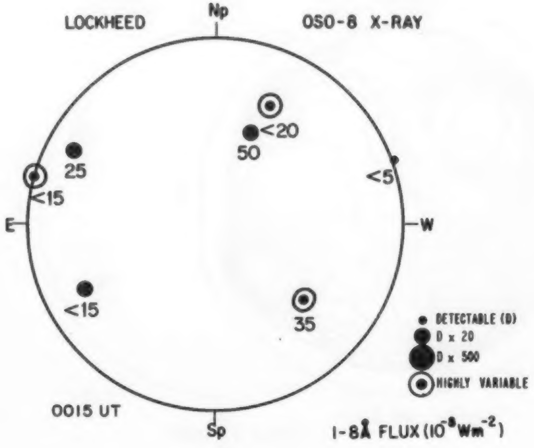
NOSC LA POSTA 2.0 CM

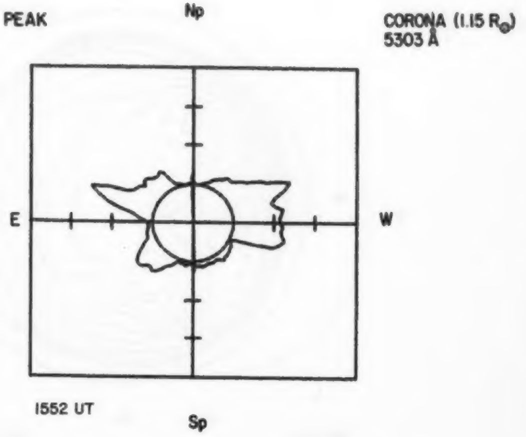


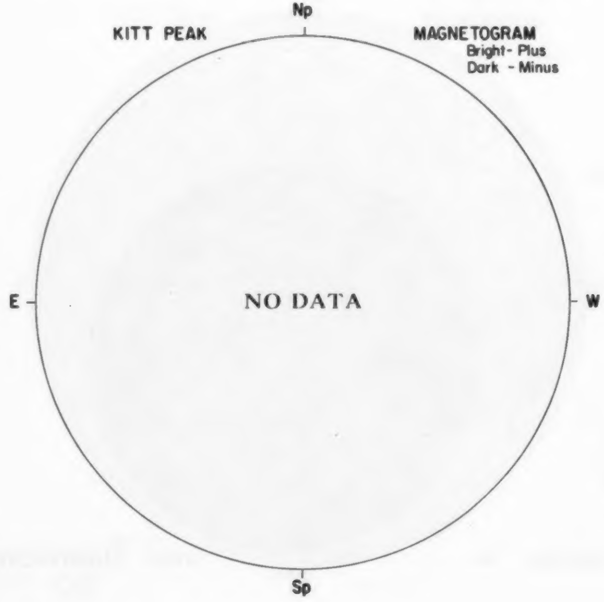
NOSC LA POSTA 8.6 MM

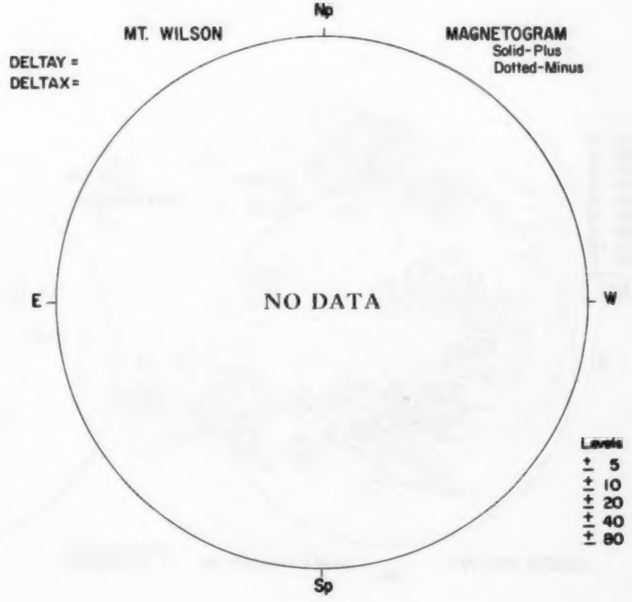


FEBRUARY 4, 1978 (P =-13.28, B_0 =-6.23 L_0 =132.62)



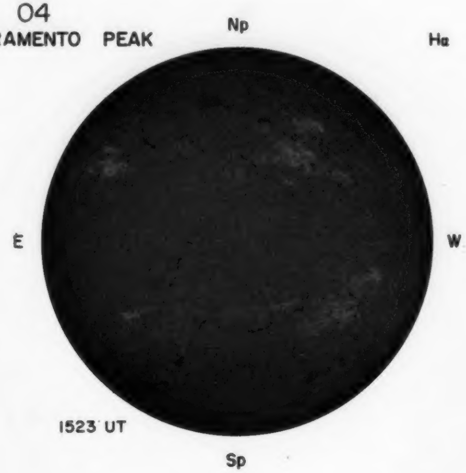




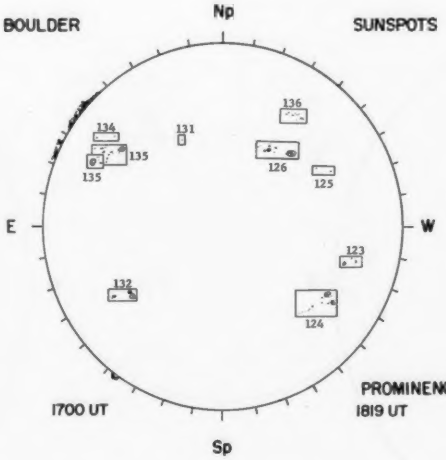


04

SACRAMENTO PEAK Hα

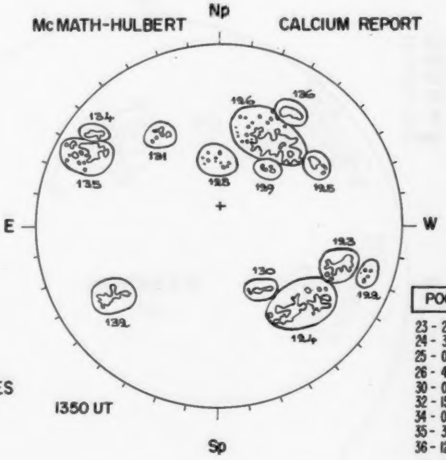


BOULDER SUNSPOTS



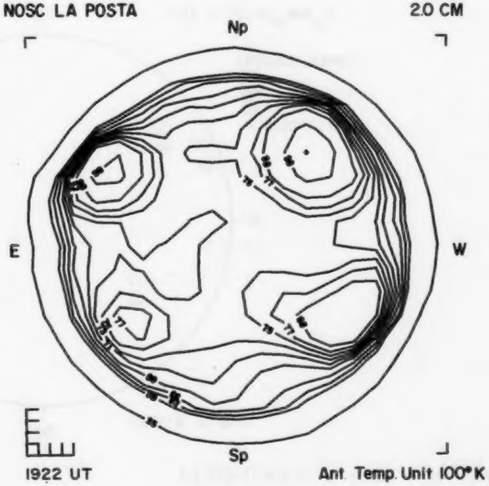
PROMINENCES
1819 UT

McMATH-HULBERT CALCIUM REPORT

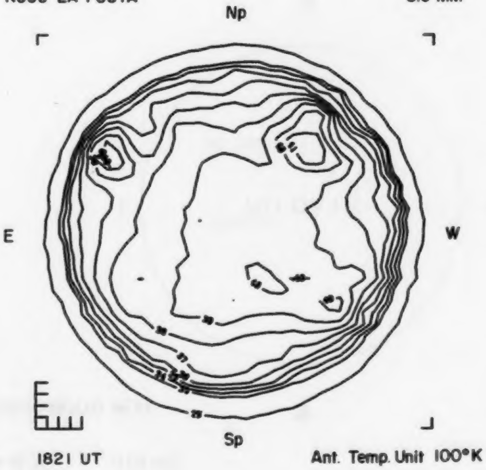


POOR	M
23 - 2000	30
24 - 3900	30
25 - 0900	25
26 - 4300	35
30 - 0400	25
32 - 1500	30
34 - 0900	30
35 - 3500	35
36 - 1200	35

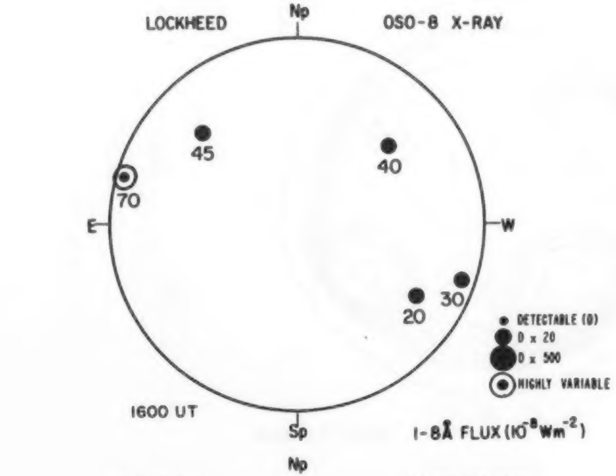
NOSC LA POSTA 2.0 CM

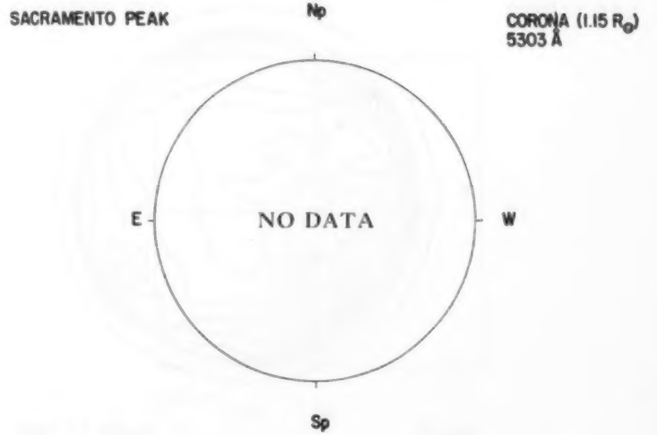


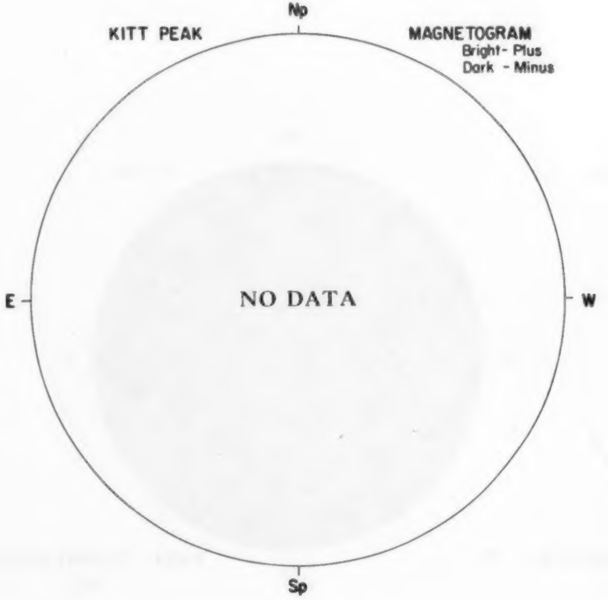
NOSC LA POSTA 8.6 MM

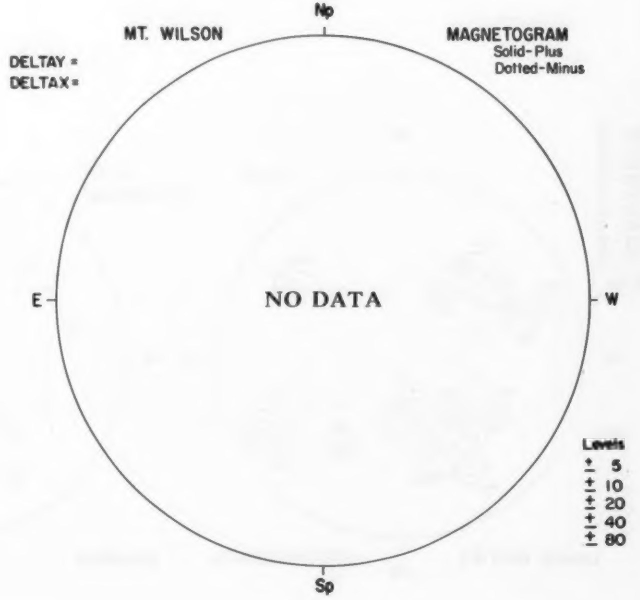


FEBRUARY 5, 1978 (P = -13.67, B_o = -6.30, L_o = 119.45)









05
SACRAMENTO PEAK

Np

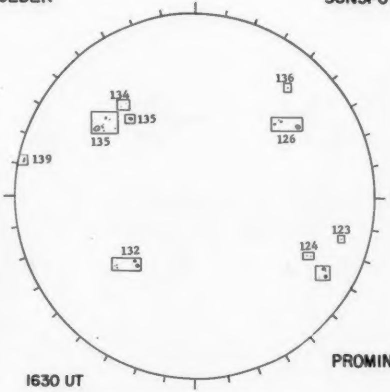
E W

1622 UT

Sp

Hα BOULDER SUNSPOTS

Np

E 

W

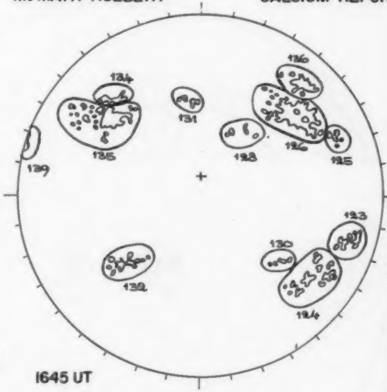
PROMINENCES

1630 UT

Sp

McMATH-HULBERT CALCIUM REPORT

Np

E 

W

1645 UT

Sp

FAIR	D
23 - 1600-30	
24 - 3000-35	
25 - 0600-25	
26 - 4300-35	
30 - 0300-25	
32 - 1200-35	
34 - 1100-35	
35 - 3200-35	
36 - 1500-30	
39 - 1200-40	

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100°K

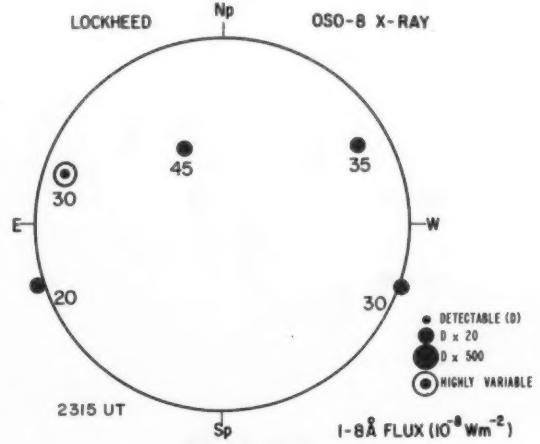
NOSC LA POSTA Np 8.6 MM

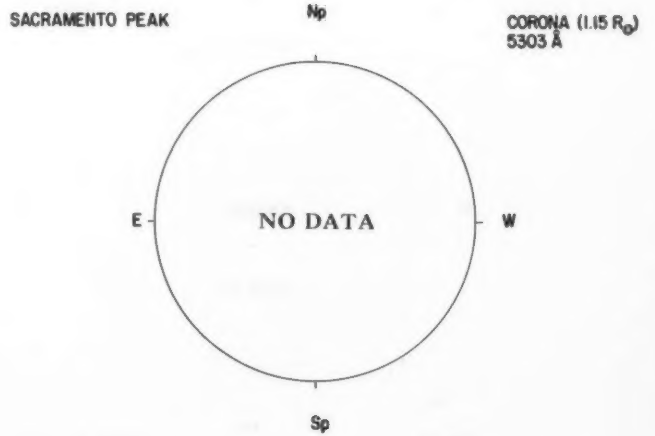
NO DATA

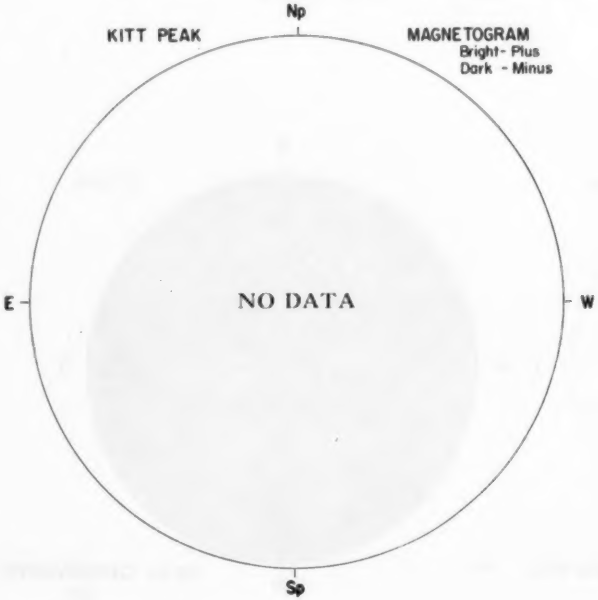
E WEATHER W

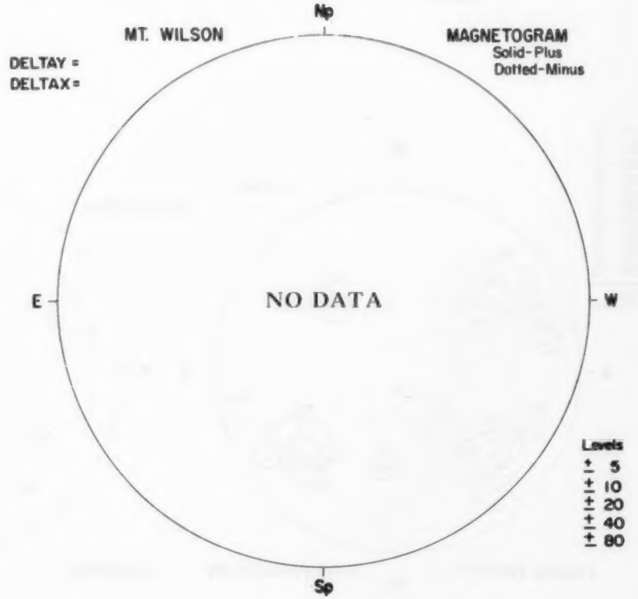
---- UT Sp Ant. Temp. Unit 100°K

FEBRUARY 6, 1978 (P =-14.06, B_0 =-6.36, L_0 =106.29)



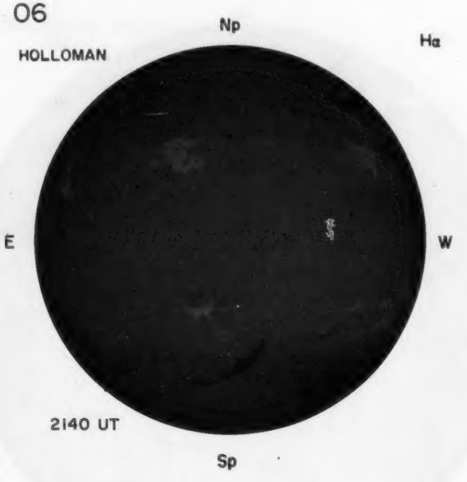




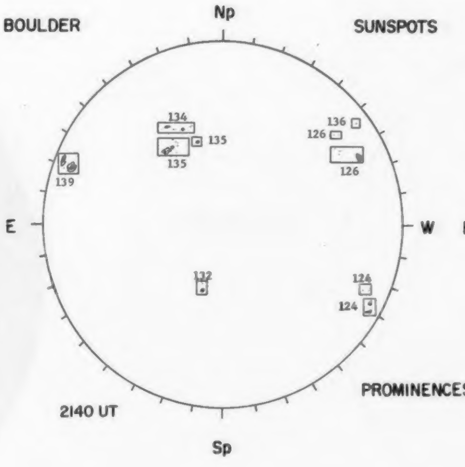


06

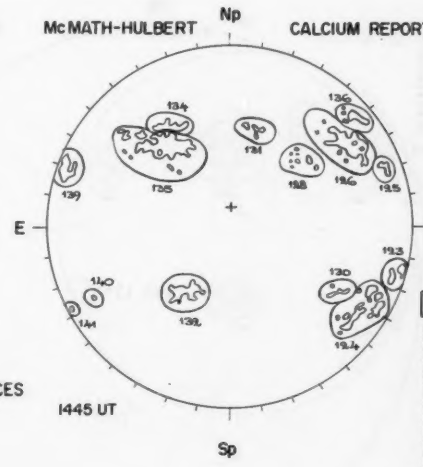
HOLLOMAN — Hα



BOULDER — SUNSPOTS — PROMINENCES

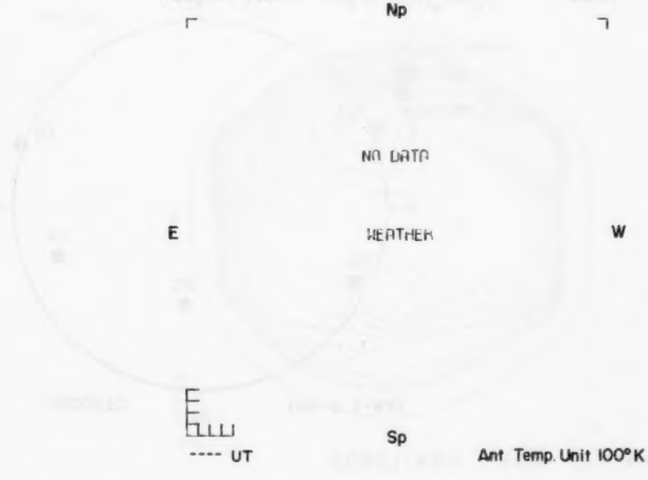


McMATH-HULBERT — CALCIUM REPORT

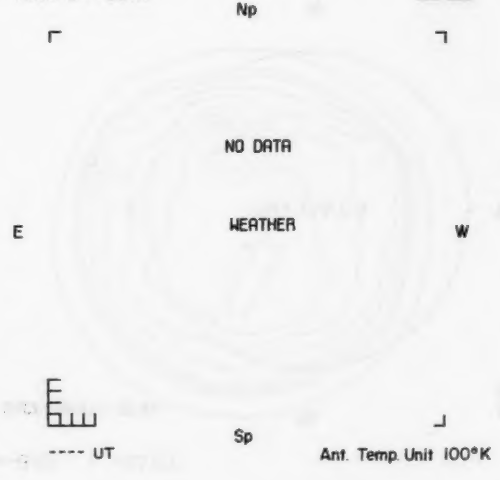


POOR	S
23 - 1800 - 30	
24 - 3300 - 30	
25 - 0700 - 25	
26 - 4300 - 30	
30 - 0400 - 25	
31 - 0400 - 25	
32 - 1500 - 30	
34 - 1200 - 30	
35 - 3500 - 30	
36 - 1500 - 30	
39 - 2800 - 40	

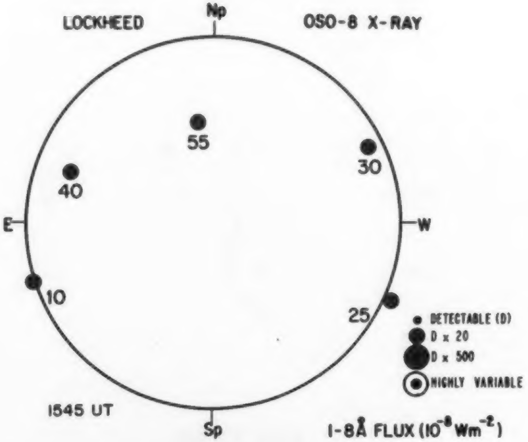
NOSC LA POSTA — 2.0 CM

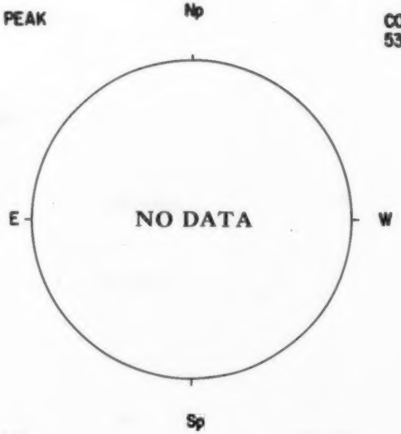


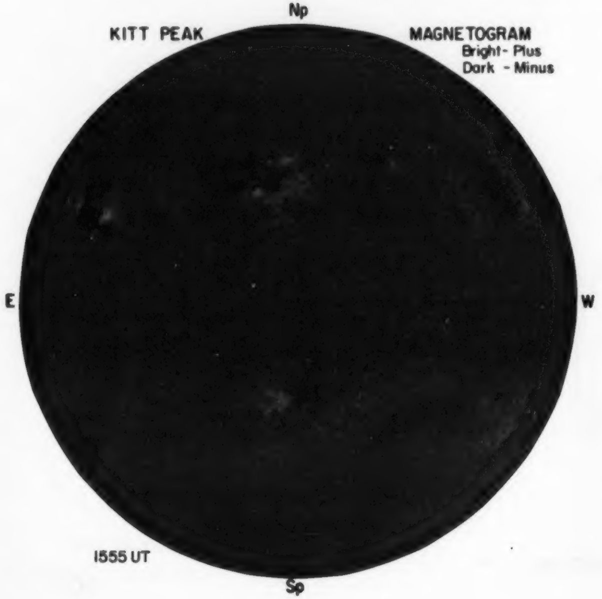
NOSC LA POSTA — 8.6 MM

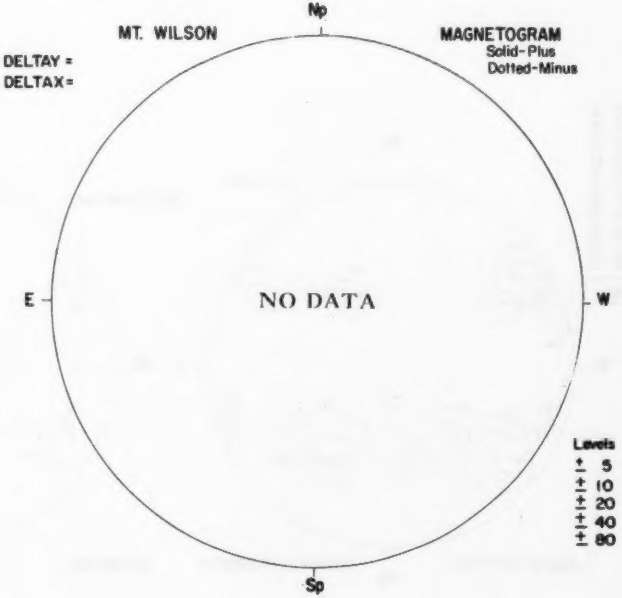


FEBRUARY 7, 1978 (P =-14.45, B_0 =-6.42, L_0 =93.12)



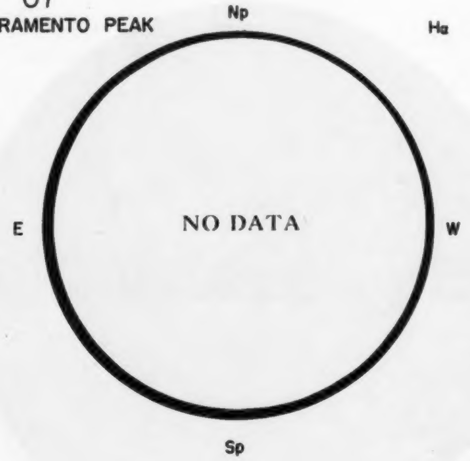




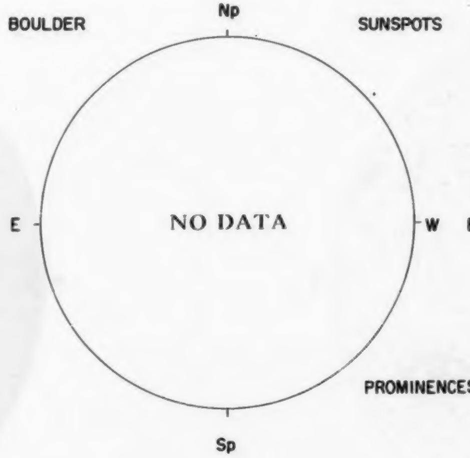


07

SACRAMENTO PEAK Hα

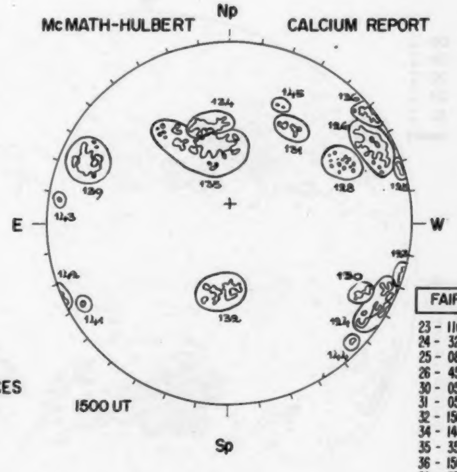


BOULDER SUNSPOTS



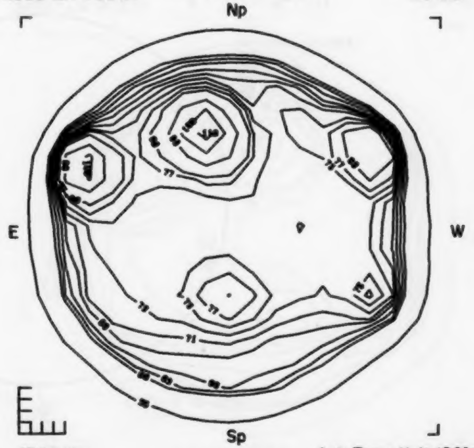
PROMINENCES

McMATH-HULBERT CALCIUM REPORT



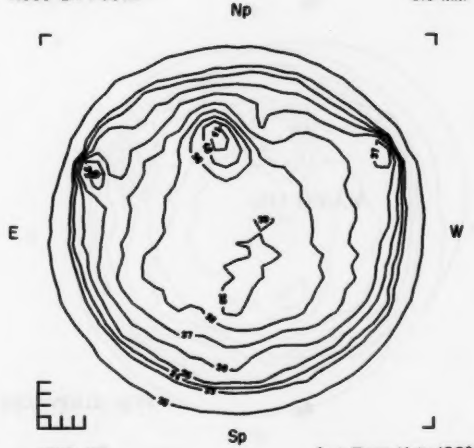
FAIR	M
23 -	1100-25
24 -	3200-30
25 -	0800-25
26 -	4500-30
30 -	0500-25
31 -	0500-25
32 -	1500-30
34 -	1400-30
35 -	3500-35
36 -	1500-30
39 -	3700-35

NOSC LA POSTA 2.0 CM



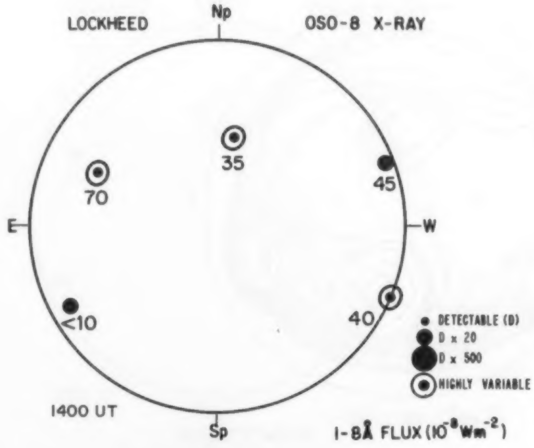
1746 UT Ant. Temp. Unit 100°K

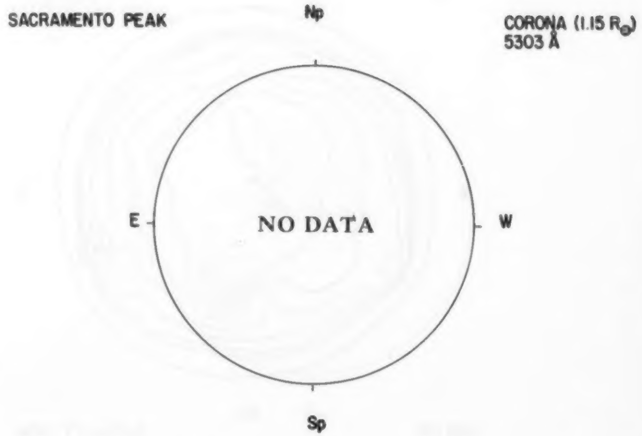
NOSC LA POSTA 8.6 MM

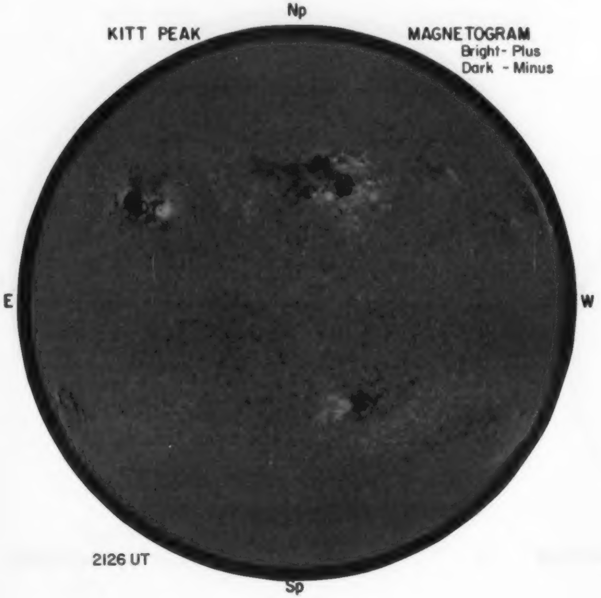


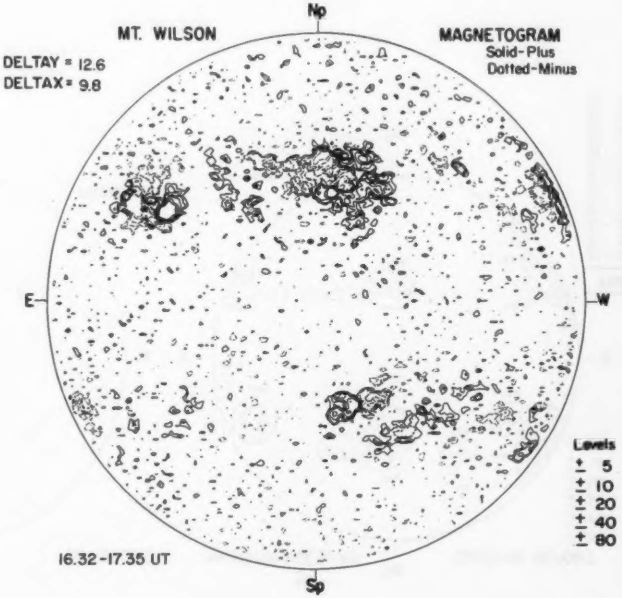
1822 UT Ant. Temp. Unit 100°K

FEBRUARY 8, 1978 (P = -14.83, B_o = -6.48, L_o = 79.96)

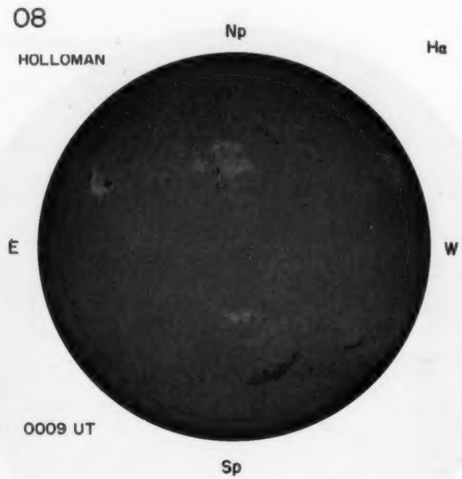


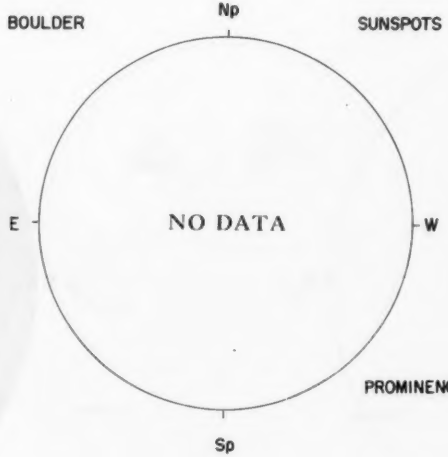


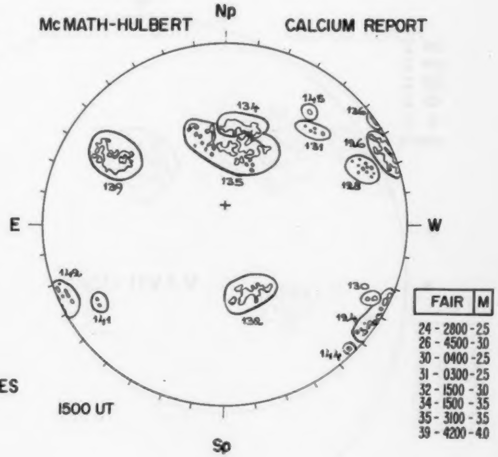


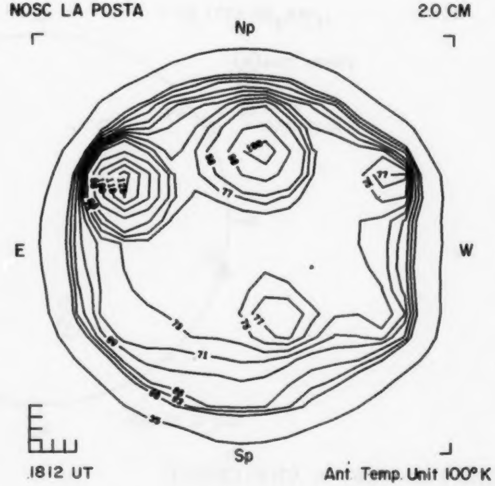


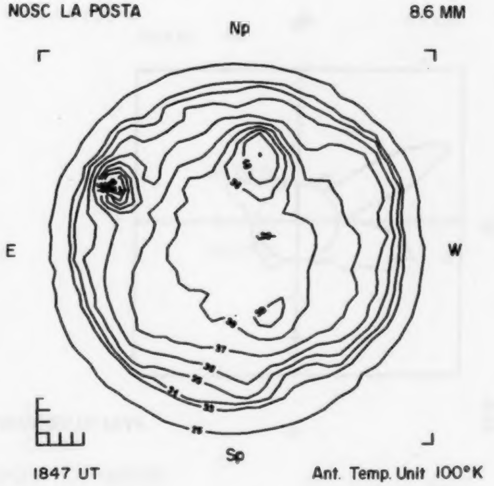
08


HOLLOMAN
Hα
Np
E
W
Sp
0009 UT


BOULDER
SUNSPOTS
Np
E
W
Sp
NO DATA
PROMINENCES

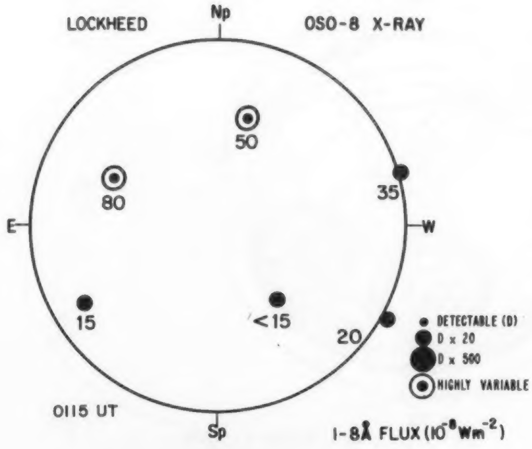

McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
134
145
126
131
136
139
135
128
142
141
138
130
134
144
1500 UT
FAIR M
24 - 2800 - 25
26 - 4500 - 30
30 - 0400 - 25
31 - 0300 - 25
32 - 1500 - 30
34 - 1500 - 35
35 - 3100 - 35
39 - 4200 - 40


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1812 UT
Ant. Temp. Unit 100°K


NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1847 UT
Ant. Temp. Unit 100°K

FEBRUARY 9, 1978 (P =-15.20, B_0 =-6.54, L_0 =66.79)

LOCKHEED OSO-8 X-RAY

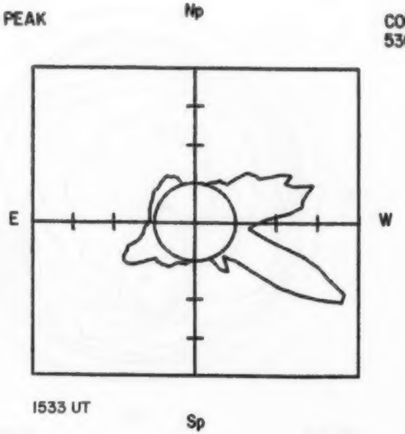


0115 UT

1-8Å FLUX (10^{-8} Wm^{-2})

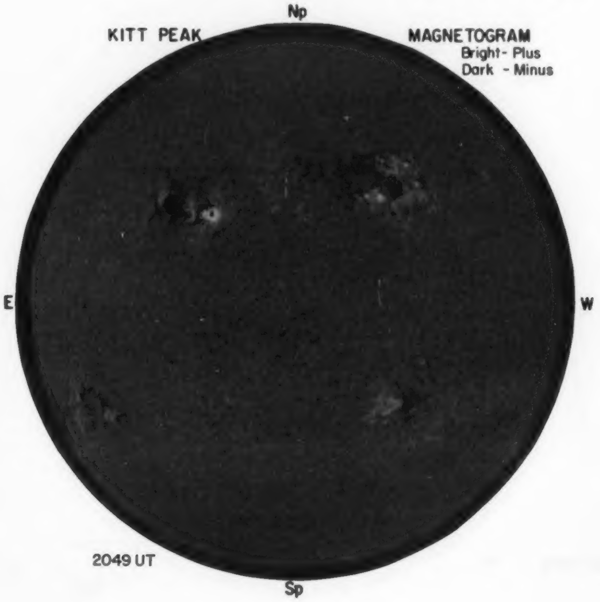
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



1533 UT

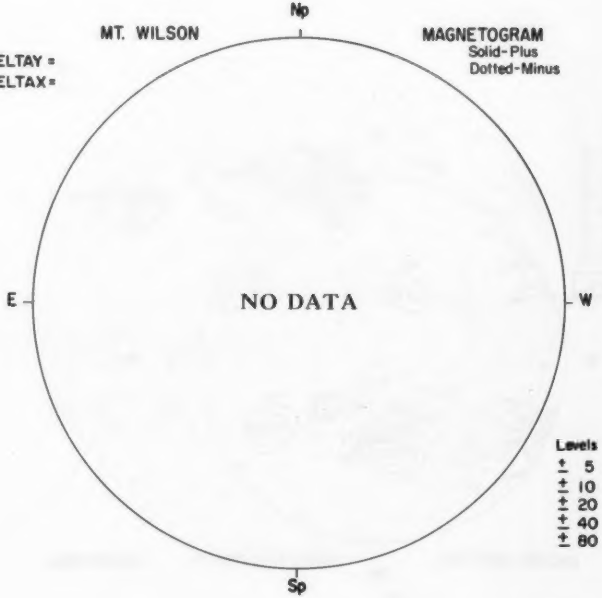
KITT PEAK MAGNETOGRAM
Bright- Plus
Dark - Minus



2049 UT

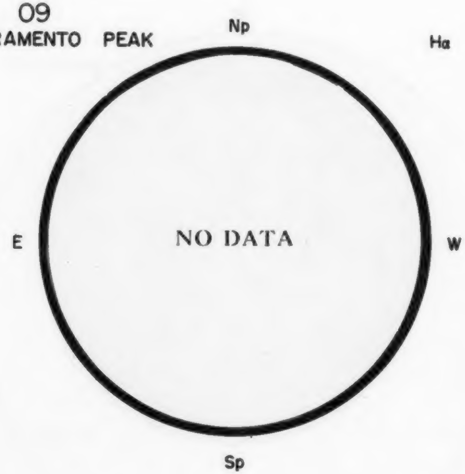
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX=

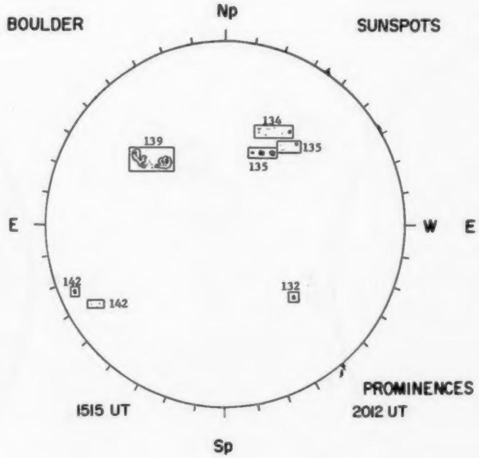


09

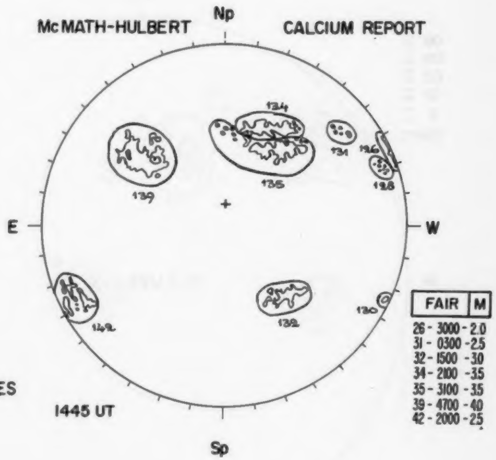
SACRAMENTO PEAK Hα



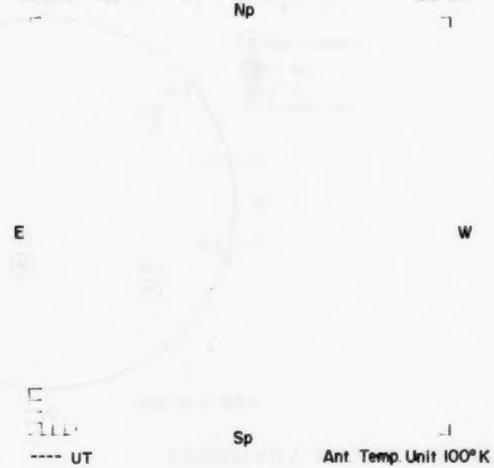
BOULDER SUNSPOTS



McMATH-HULBERT CALCIUM REPORT



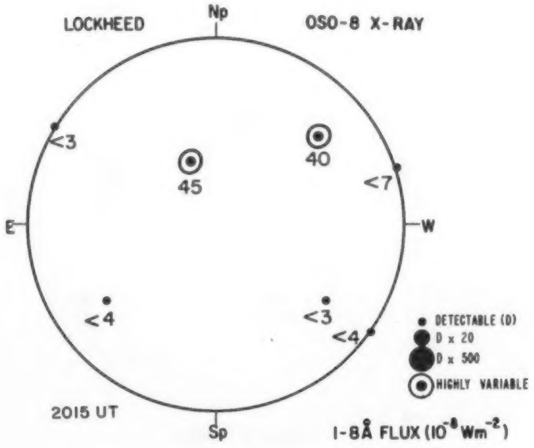
NOSC LA POSTA 2.0 CM



NOSC LA POSTA 8.6 MM

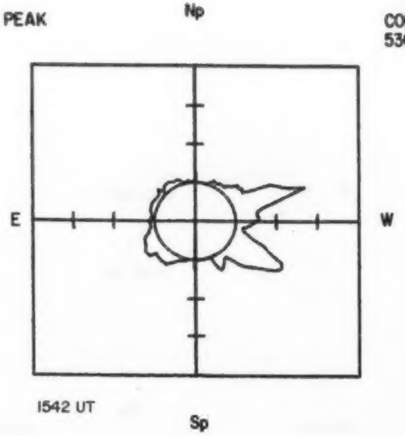
FEBRUARY 10, 1978 (P =-15.57, B_o =-6.59, L_o =53.62)

LOCKHEED OSO-8 X-RAY



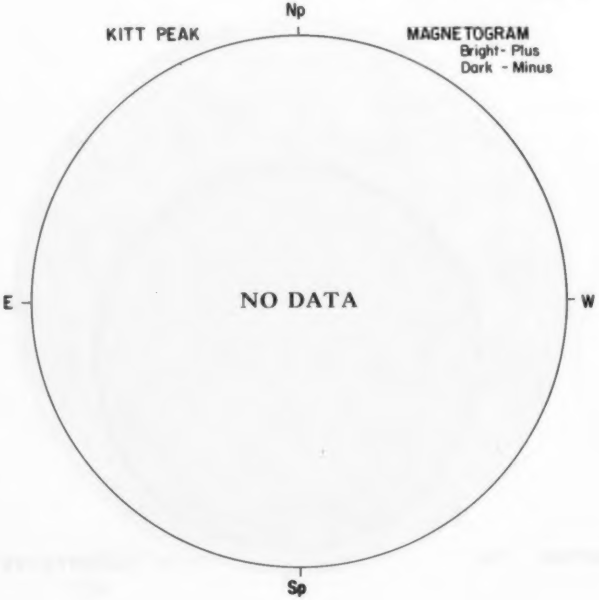
2015 UT 1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_{\odot}$) 5303 Å



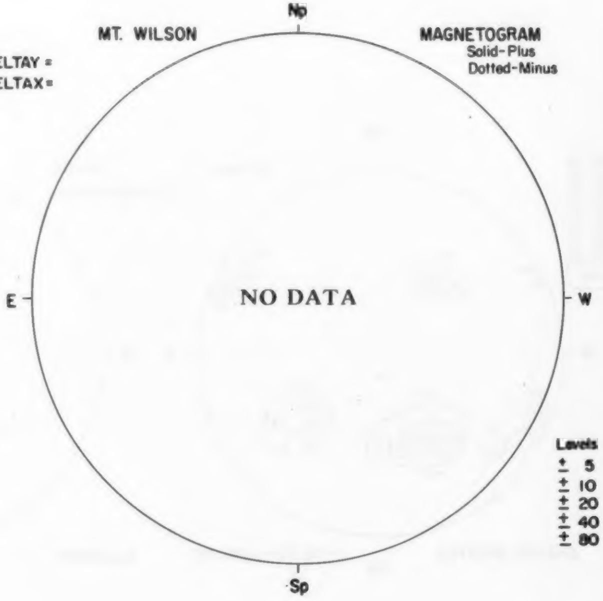
1542 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

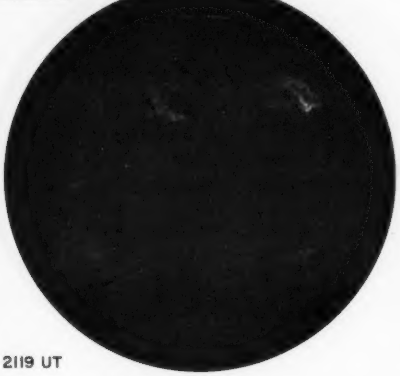
DELTAY =
DELTAX=



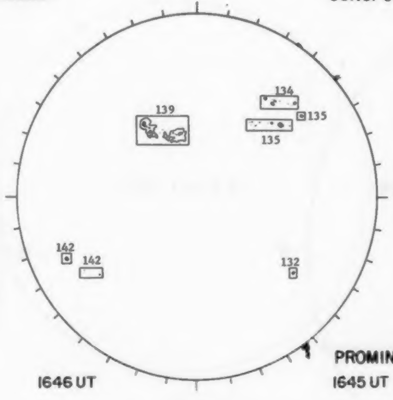
Levels
± 5
± 10
± 20
± 40
± 80

10

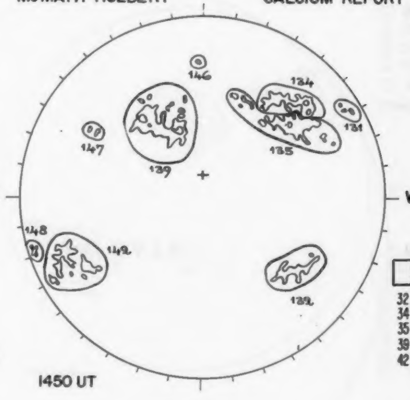
HOLLOMAN — Hα — 2119 UT



BOULDER — SUNSPOTS — 1646 UT — PROMINENCES 1645 UT



McMATH-HULBERT — CALCIUM REPORT — 1450 UT



FAIR	S
32 - 1600 - 30	
34 - 2400 - 35	
35 - 3400 - 35	
39 - 4700 - 40	
42 - 2400 - 30	

NOSC LA POSTA — 2.0 CM

Np

E — NO DATA WEATHER — W

Sp

---- UT

Ant. Temp. Unit 100°K

NOSC LA POSTA — 8.6 MM

Np

E — NO DATA WEATHER — W

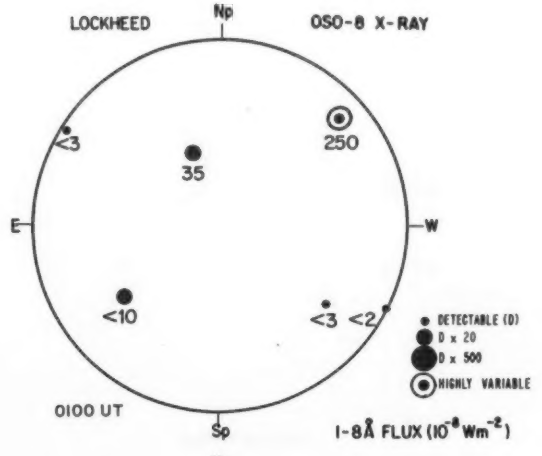
Sp

---- UT

Ant. Temp. Unit 100°K

FEBRUARY 11, 1978 (P =-15.93, B_0 =-6.64, L_0 =40.46)

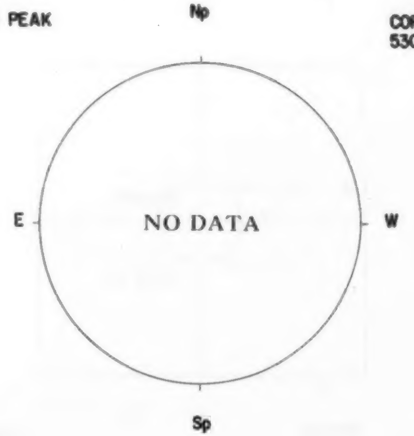
LOCKHEED — OSO-8 X-RAY



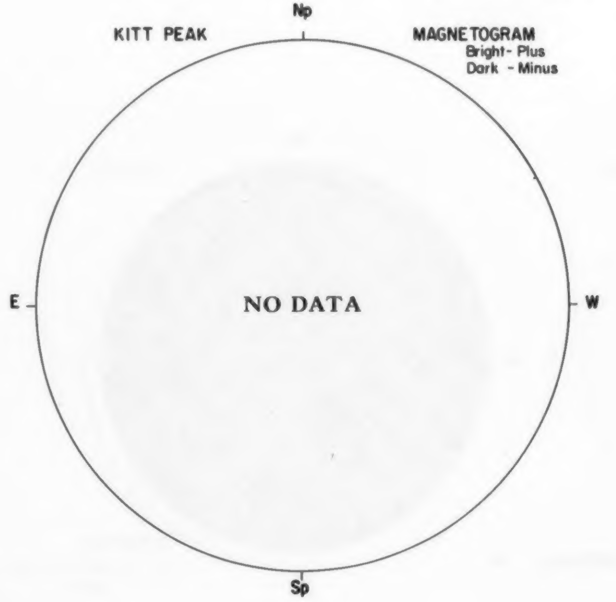
0100 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å

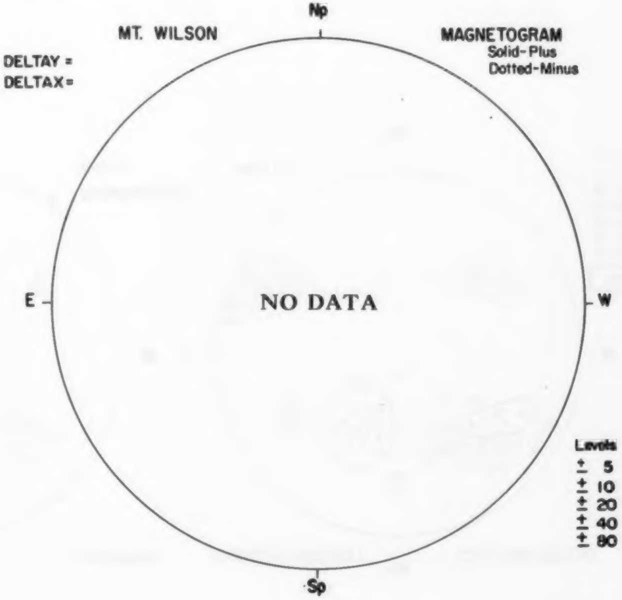


KITT PEAK — MAGNETOGRAM
Bright- Plus
Dark - Minus



MT. WILSON — MAGNETOGRAM
Solid-Plus
Dotted-Minus

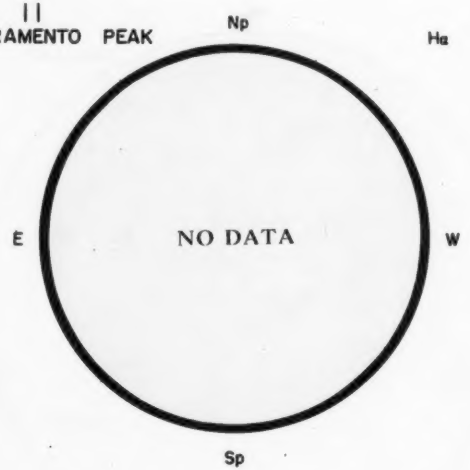
DELTAY =
DELTAX=



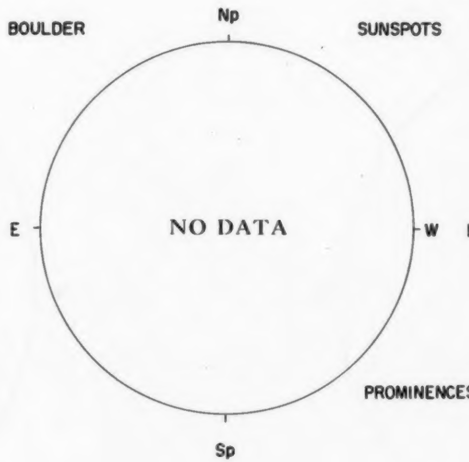
Levels
± 5
± 10
± 20
± 40
± 80

11

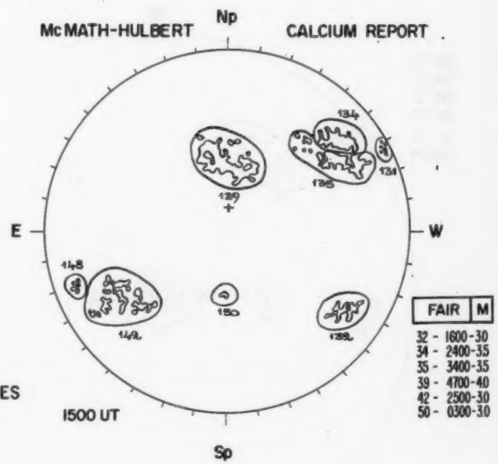
SACRAMENTO PEAK Hα



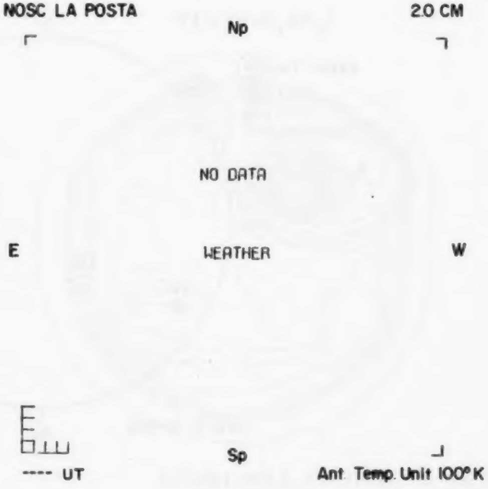
BOULDER SUNSPOTS



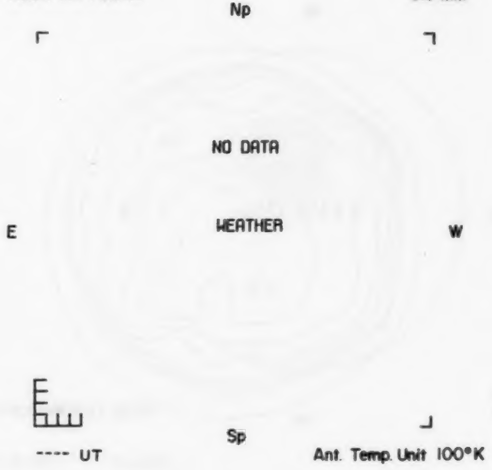
McMATH-HULBERT CALCIUM REPORT



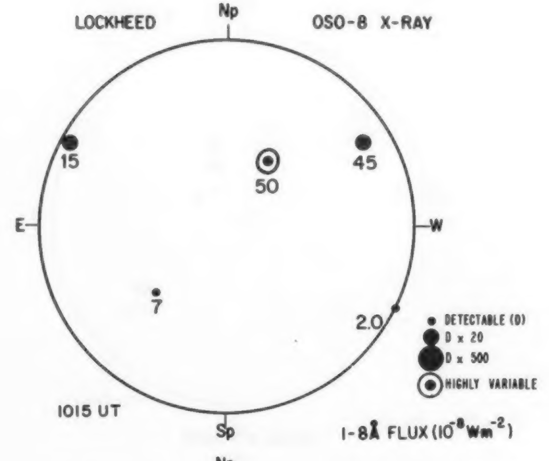
NOSC LA POSTA 2.0 CM

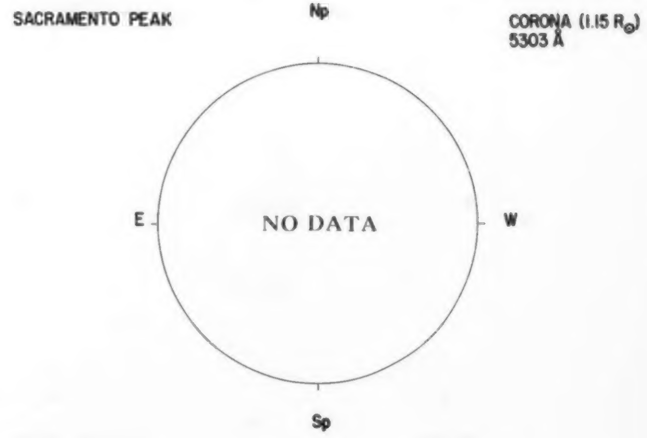


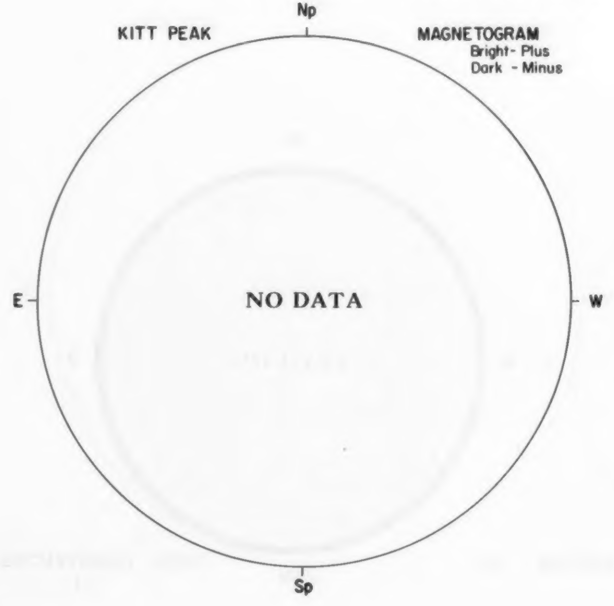
NOSC LA POSTA 8.6 MM

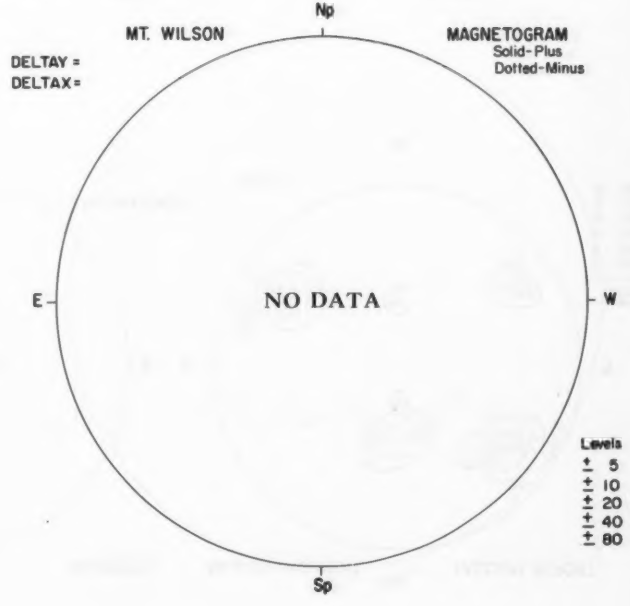


FEBRUARY 12, 1978 (P =-16.29, B_0 =-6.69, L_0 =27.29)



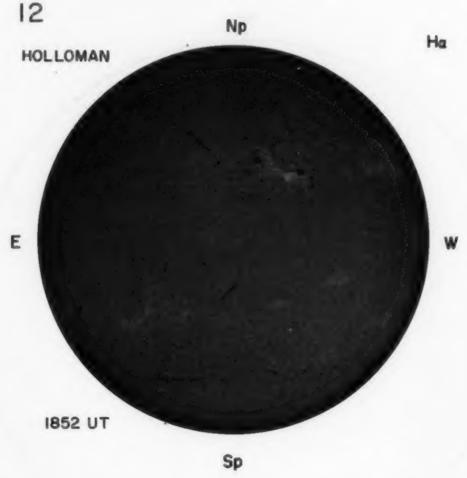




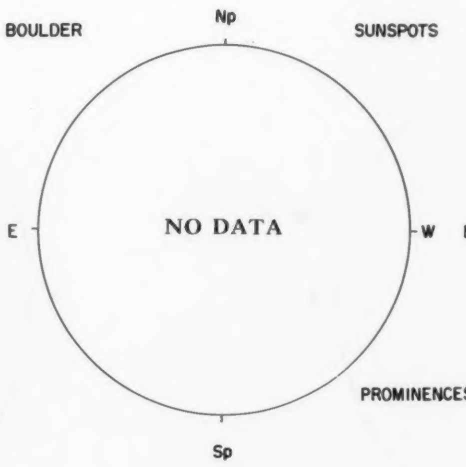


12

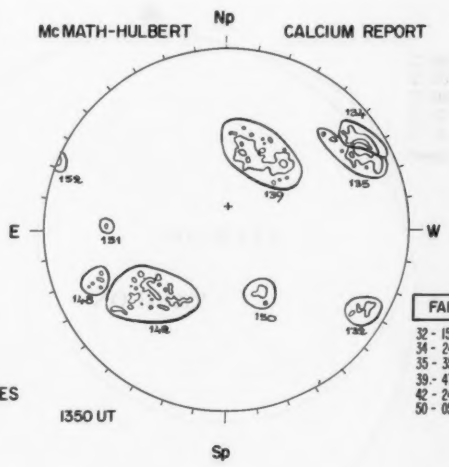
HOLLOMAN Hα



BOULDER SUNSPOTS PROMINENCES

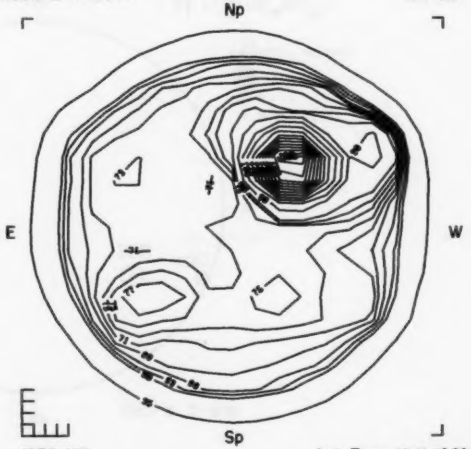


McMATH-HULBERT CALCIUM REPORT



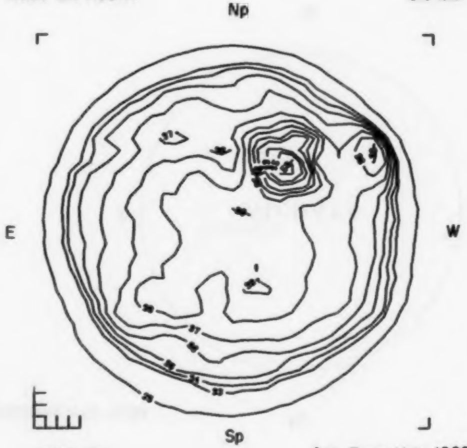
FAIR	S
32 - 1500 - 30	
34 - 2400 - 35	
35 - 3500 - 35	
39 - 4700 - 40	
42 - 2400 - 30	
50 - 0500 - 30	

NOSC LA POSTA 2.0 CM



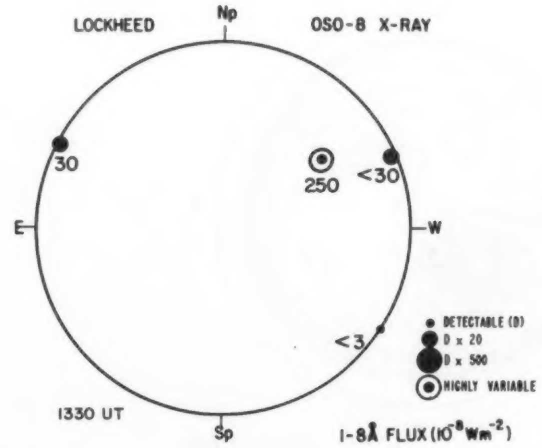
1936 UT Ant. Temp. Unit 100°K

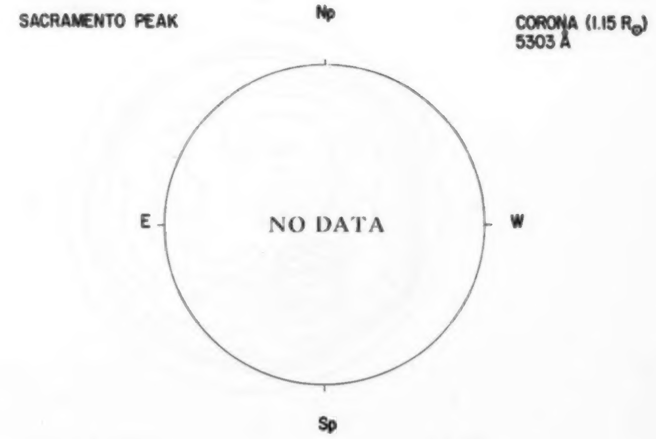
NOSC LA POSTA 8.6 MM

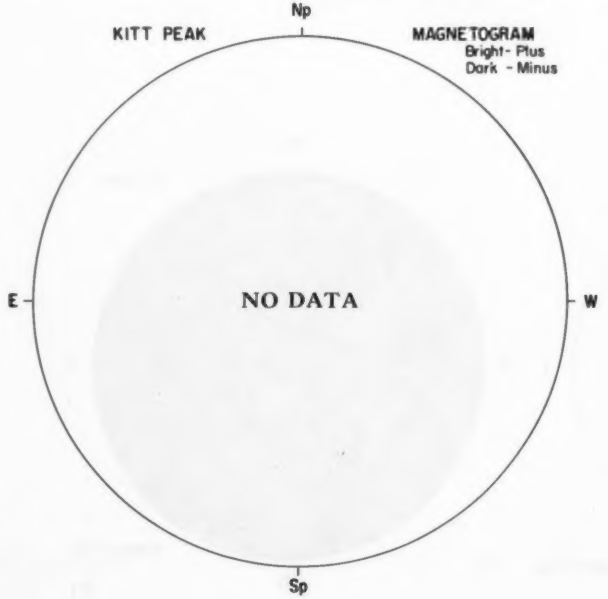


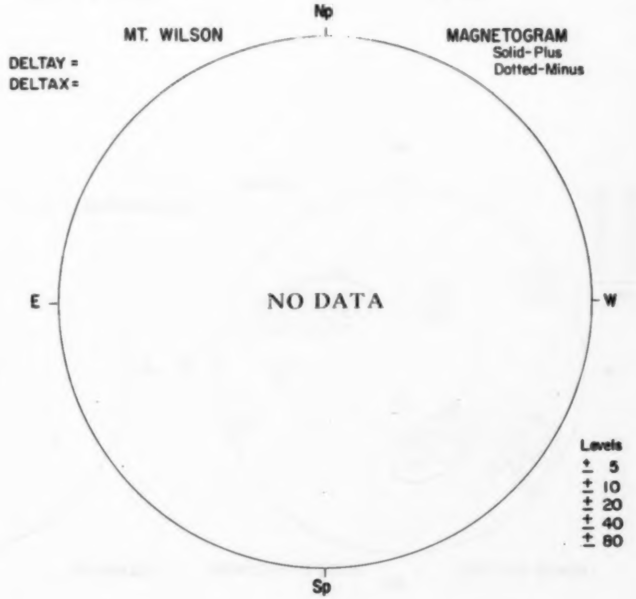
1837 UT Ant. Temp. Unit 100°K

FEBRUARY 13, 1978 (P =-16.64, B_0 =-6.74, L_0 =14.12)

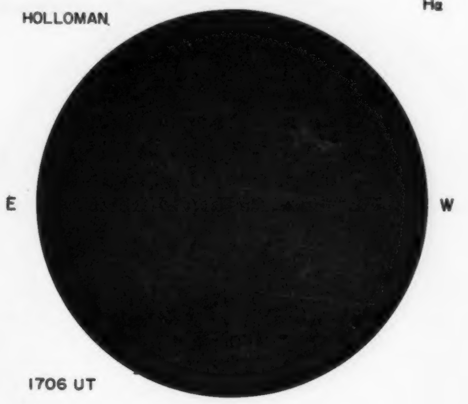




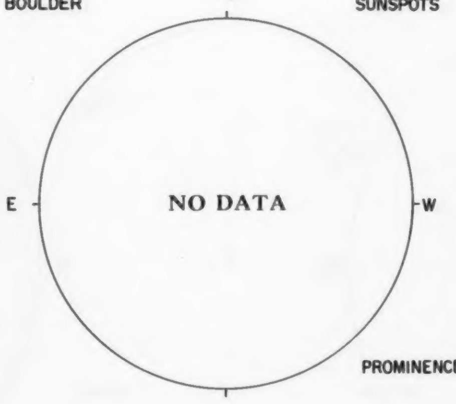




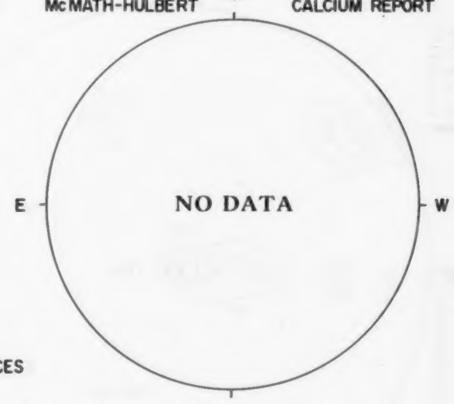
13



Hα BOULDER



SUNSPOTS McMATH-HULBERT



CALCIUM REPORT

PROMINENCES

NOSC LA POSTA 2.0 CM

Np

NO DATA

E EQUIPMENT W

Sp

---- UT Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

Np

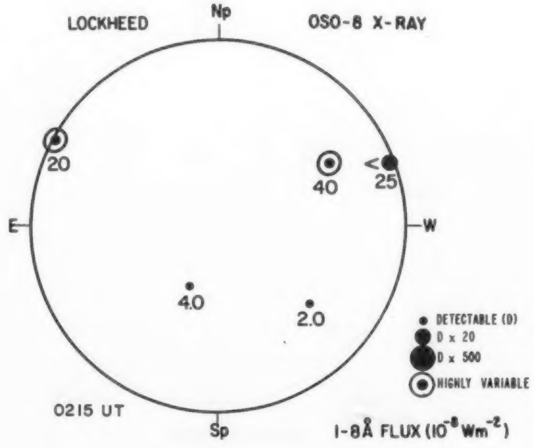
NO DATA

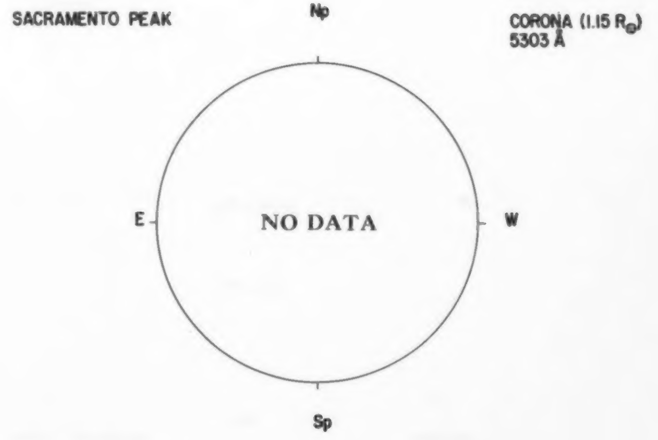
E EQUIPMENT W

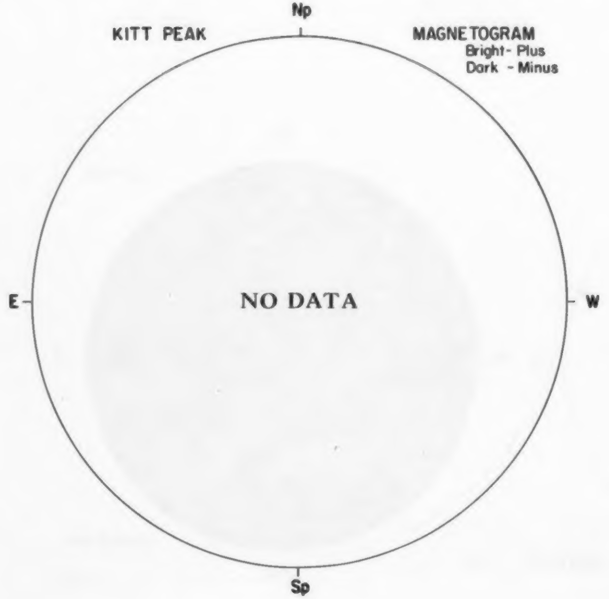
Sp

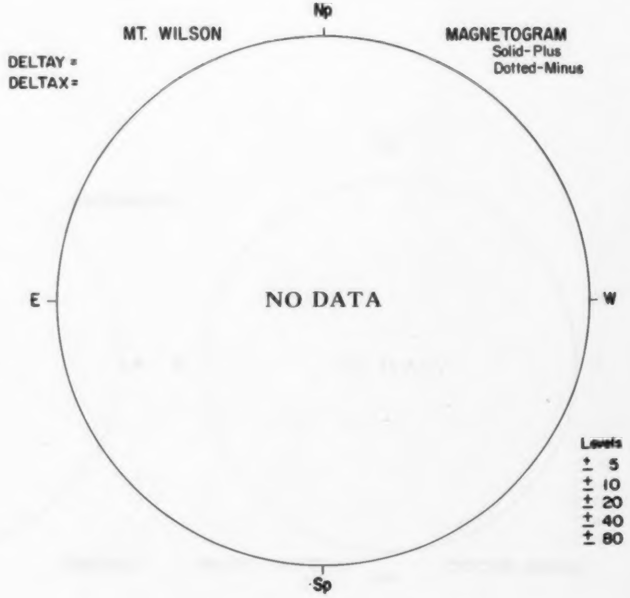
---- UT Ant. Temp. Unit 100°K

FEBRUARY 14, 1978 (P =-16.99, B_0 =-6.79, L_0 =0.95)

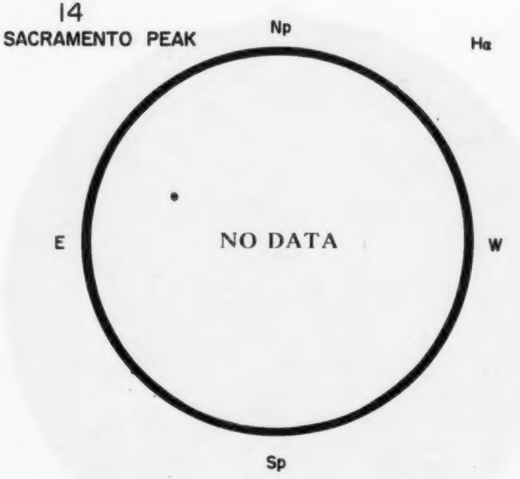


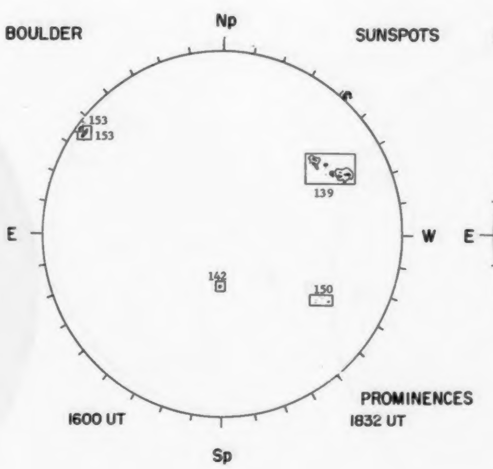


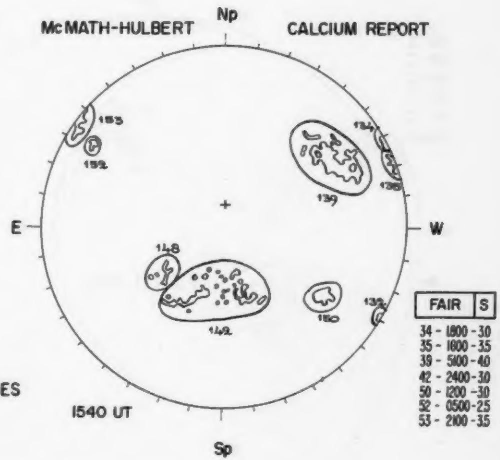


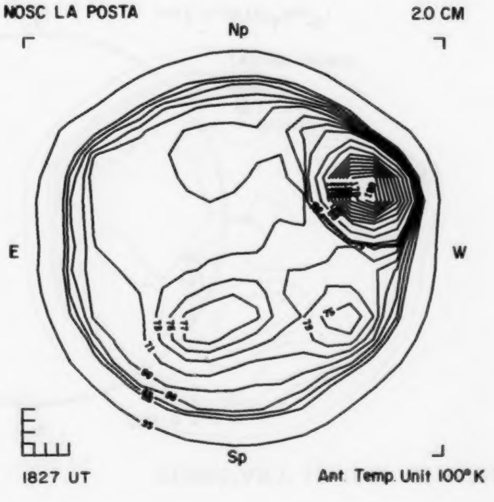


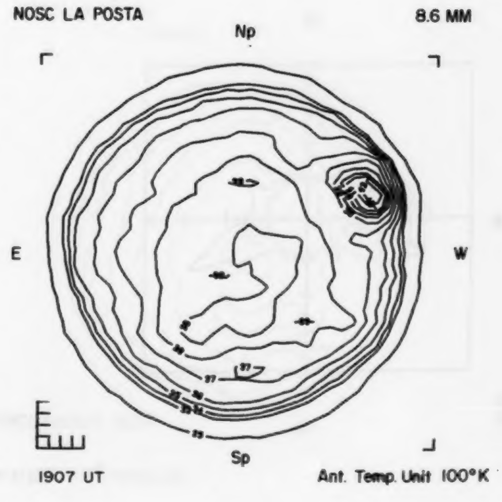
14


SACRAMENTO PEAK
Hα
Np
E
W
Sp
NO DATA


BOULDER
SUNSPOTS
Np
E
W
Sp
153
153
139
142
150
1600 UT
PROMINENCES
1832 UT

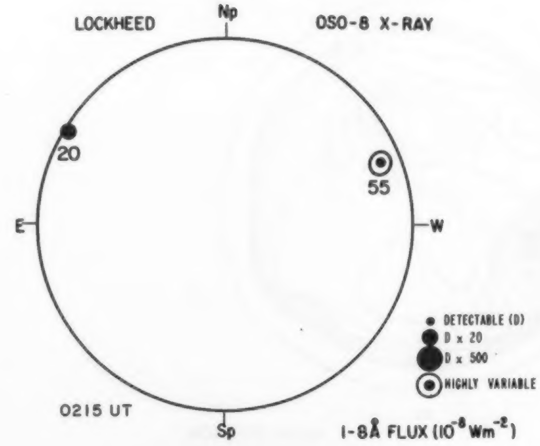

McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
153
152
134
136
139
148
142
150
132
1540 UT
FAIR S
34 - 1800 - 30
35 - 1800 - 35
39 - 5100 - 40
42 - 2400 - 30
50 - 1200 - 30
52 - 0500 - 25
53 - 2100 - 35


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1827 UT
Ant. Temp. Unit 100°K

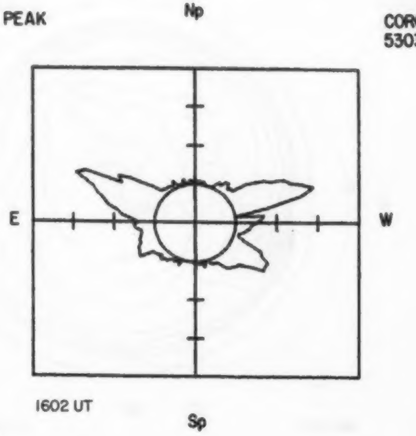

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1907 UT
Ant. Temp. Unit 100°K

FEBRUARY 15, 1978 (P =-17.33, B_0 =-6.83, L_0 =347.79)

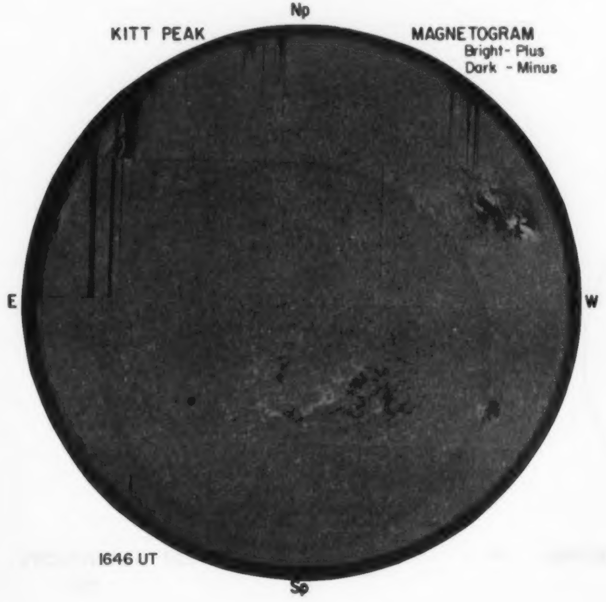
LOCKHEED



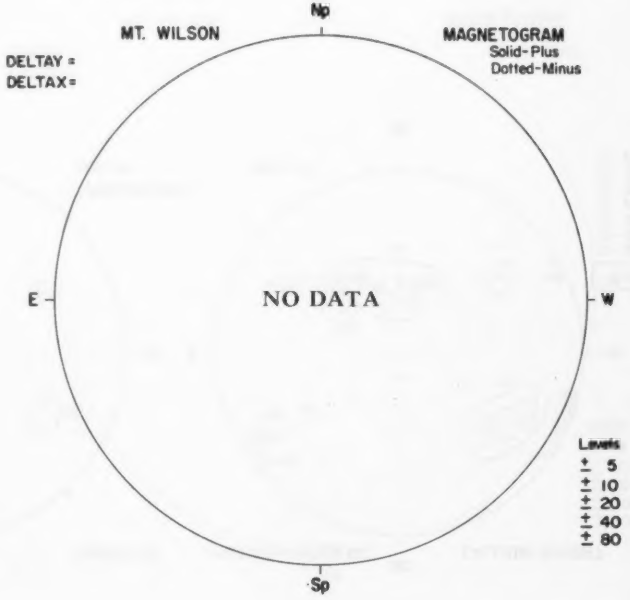
SACRAMENTO PEAK



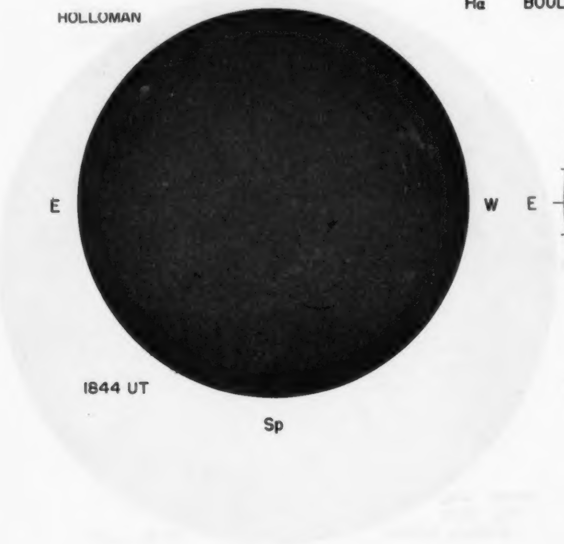
KITT PEAK

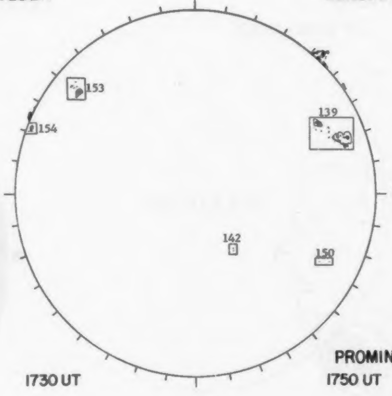


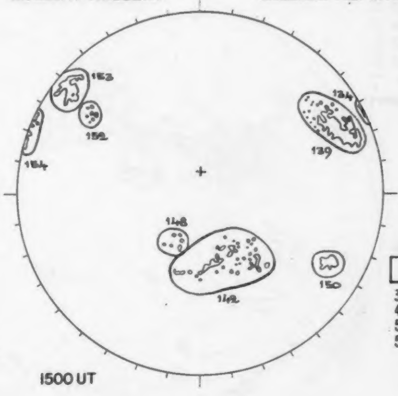
MT. WILSON

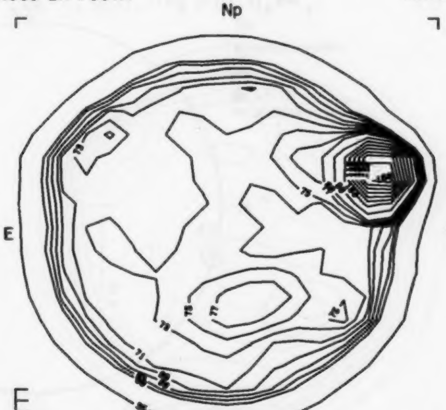


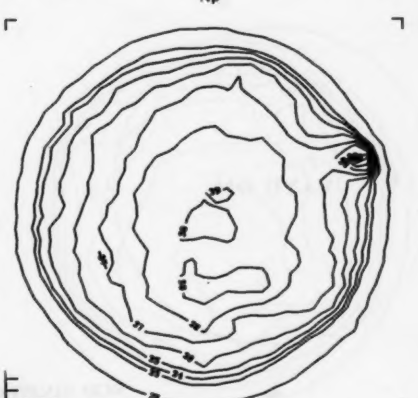
15


HOLLOMAN
Hα
Np
E
W
Sp
1844 UT

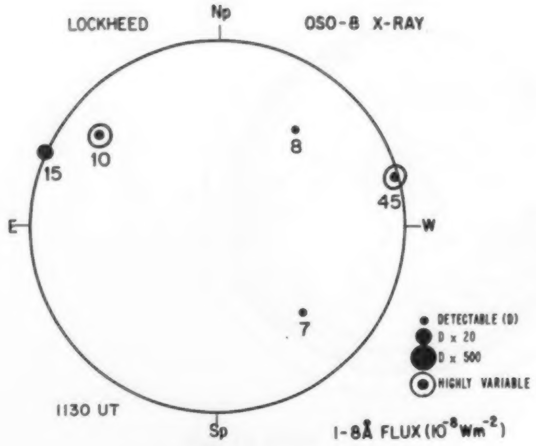

BOULDER
SUNSPOTS
Np
E
W
Sp
153
154
139
142
150
PROMINENCES
1730 UT
1750 UT

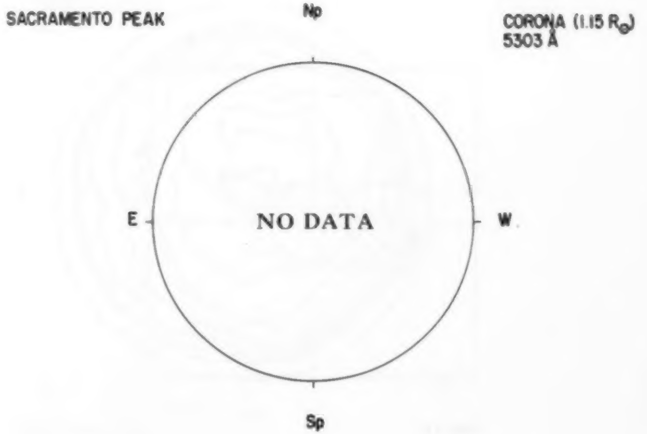

McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
153
152
154
139
148
142
150
1500 UT
FAIR
M
39 - 5000 - 35
42 - 2300 - 25
50 - 1100 - 30
53 - 3400 - 40

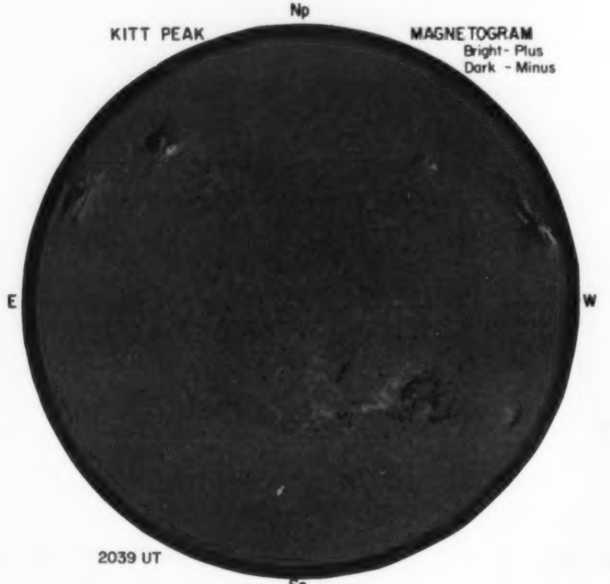

NOSC LA POSTA
2.0 CM
Np
E
W
Sp
2023 UT
Ant. Temp. Unit 100°K

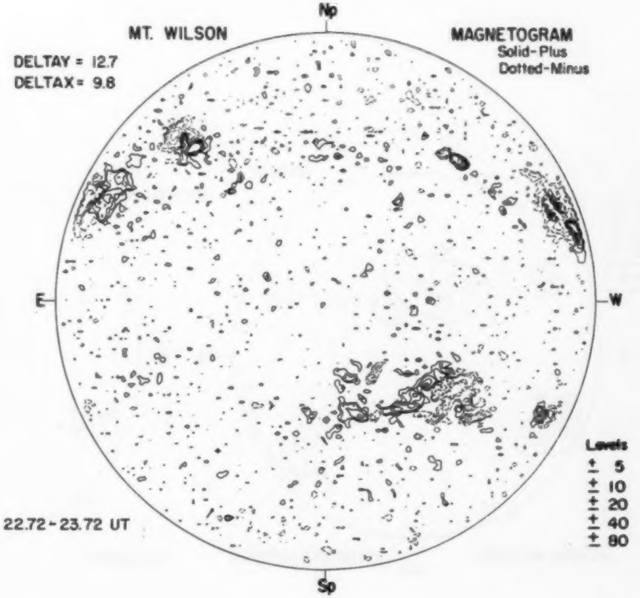

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
2059 UT
Ant. Temp. Unit 100°K

FEBRUARY 16, 1978 (P = -17.66, B_0 = -6.87, L_0 = 334.62)

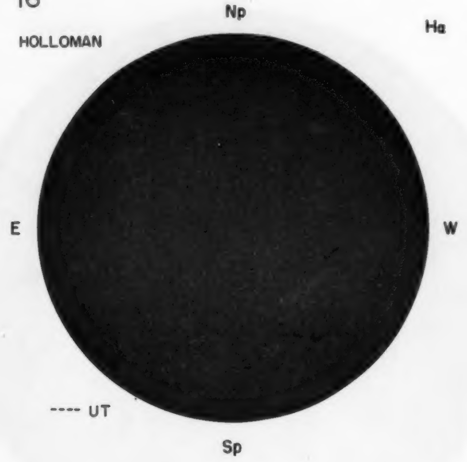


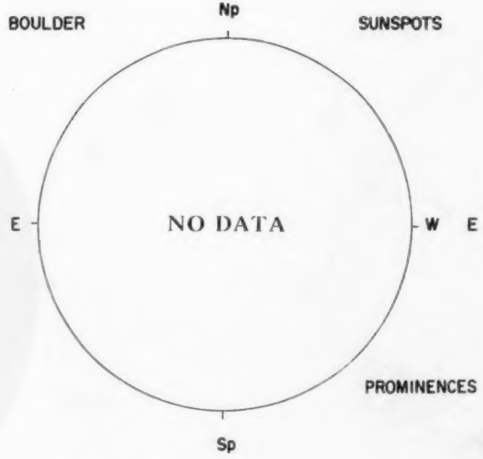


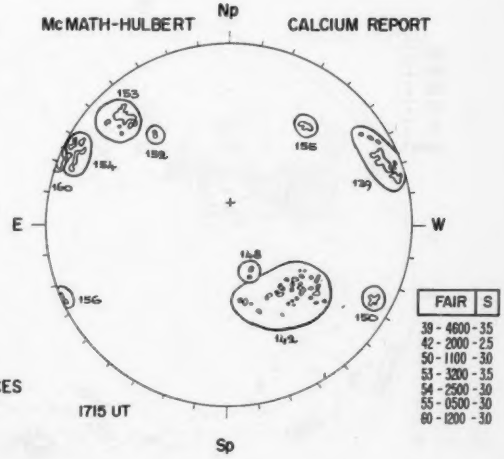


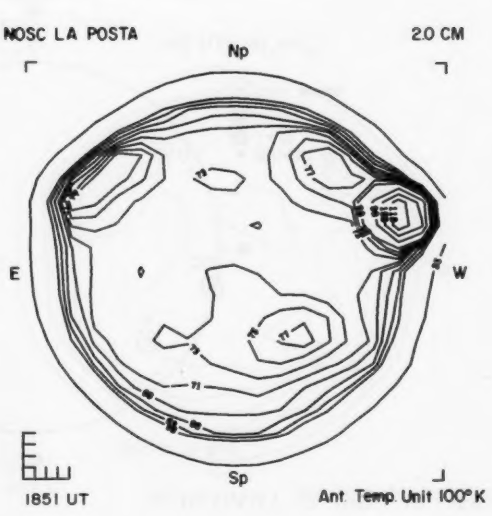


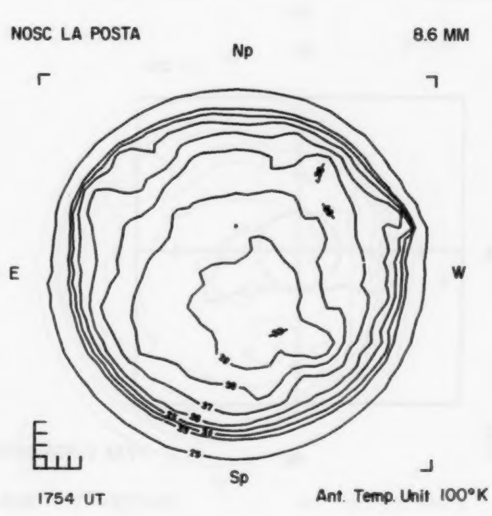
16


HOLLOMAN
Np
Hα
E
W
---- UT
Sp


BOULDER
Np
E
NO DATA
W
Sp
SUNSPOTS
PROMINENCES

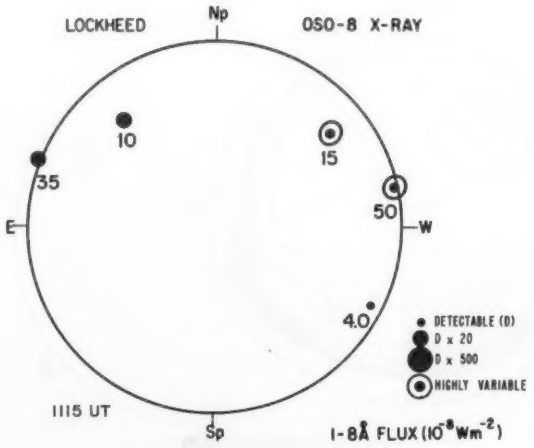

McMATH-HULBERT
Np
CALCIUM REPORT
E
W
153
154
152
160
156
155
139
148
142
150
1715 UT
Sp
FAIR | S
39 - 4600 - 3.5
42 - 2000 - 2.5
50 - 1100 - 3.0
53 - 3200 - 3.5
54 - 2500 - 3.0
55 - 0500 - 3.0
60 - 1200 - 3.0


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1851 UT
Ant. Temp. Unit 100°K


NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1754 UT
Ant. Temp. Unit 100°K

FEBRUARY 17, 1978 (P =-17.99, B_o =-6.91, L_o =321.45)

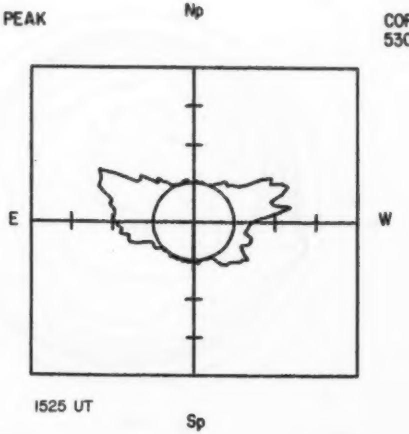
LOCKHEED OSO-8 X-RAY



1115 UT

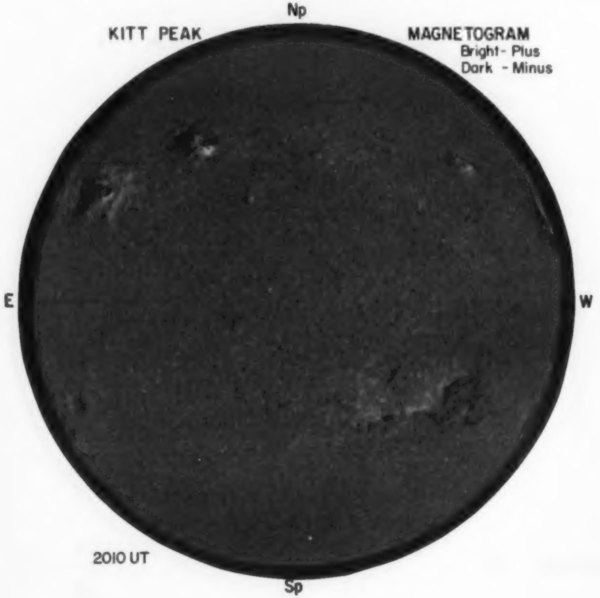
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_☉$) 5303 Å



1525 UT

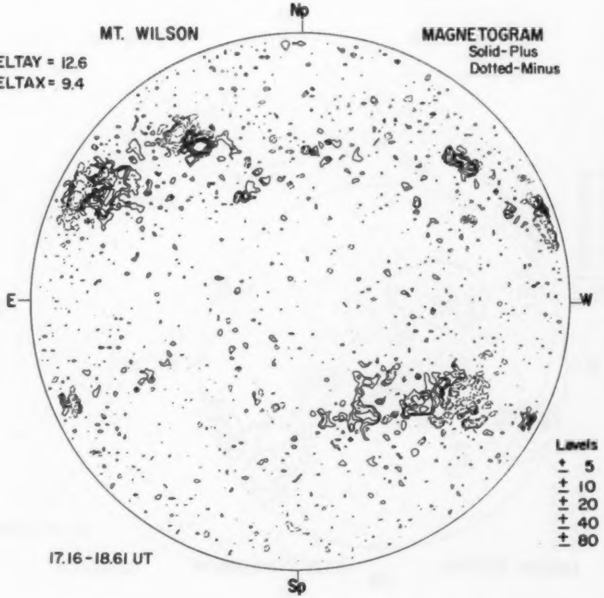
KITT PEAK MAGNETOGRAM
Bright- Plus
Dark - Minus



2010 UT

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX= 9.4

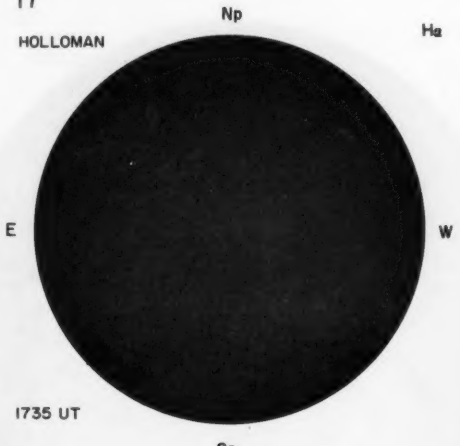


Levels
± 5
± 10
± 20
± 40
± 80

17.16-18.61 UT

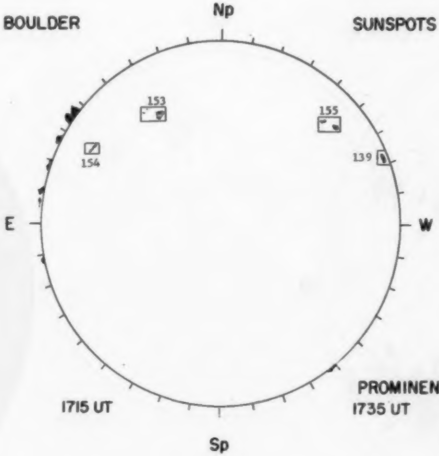
17

HOLLOMAN Hα



1735 UT

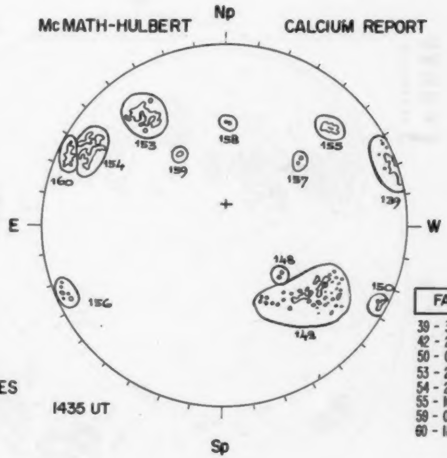
BOULDER SUNSPOTS



1715 UT

PROMINENCES
1735 UT

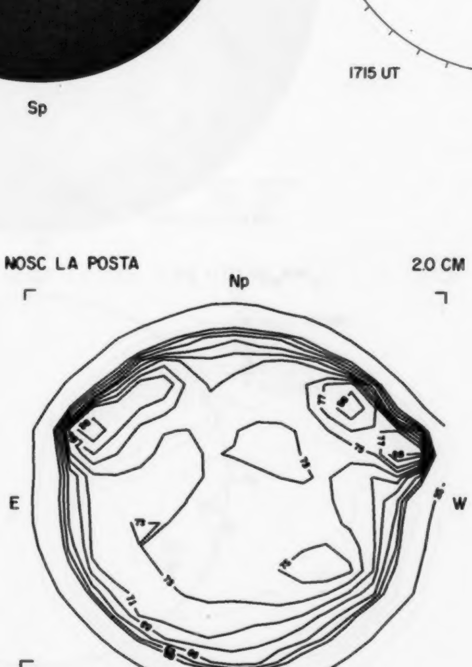
McMATH-HULBERT CALCIUM REPORT



1435 UT

FAIR	M
39 - 3600	-35
42 - 2300	-25
50 - 0700	-25
53 - 2800	-35
54 - 2500	-25
55 - 1000	-35
59 - 0100	-25
60 - 1800	-35

NOSC LA POSTA 2.0 CM



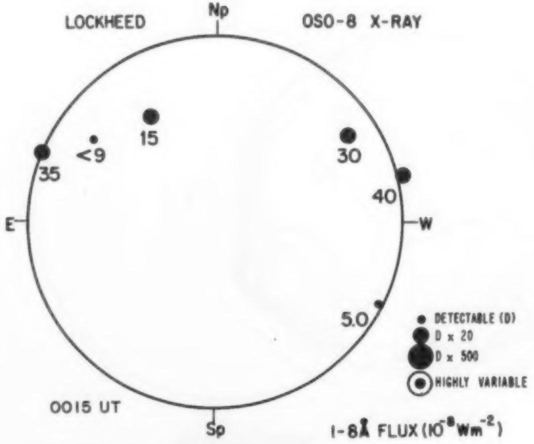
1922 UT Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

1808 UT Ant. Temp. Unit 100°K

FEBRUARY 18, 1978 (P =-18.32, B_0 =-6.95, L_0 =308.28)

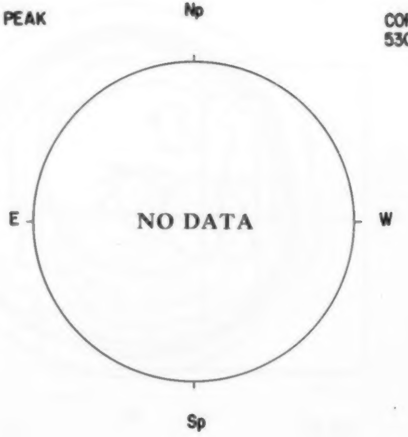
LOCKHEED OSO-8 X-RAY



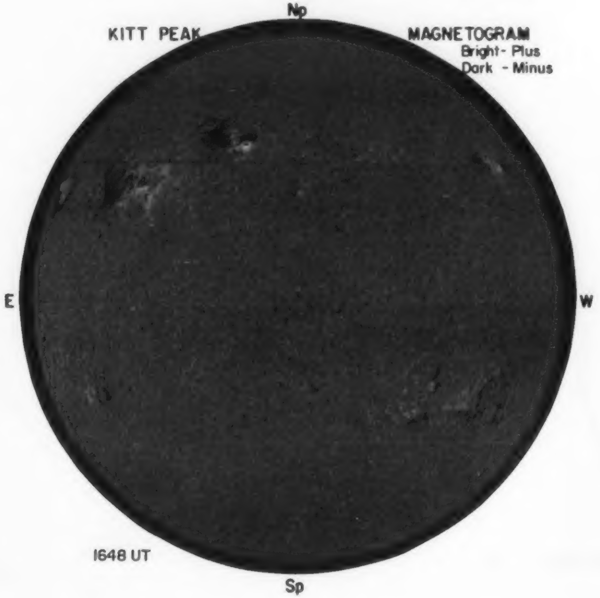
0015 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



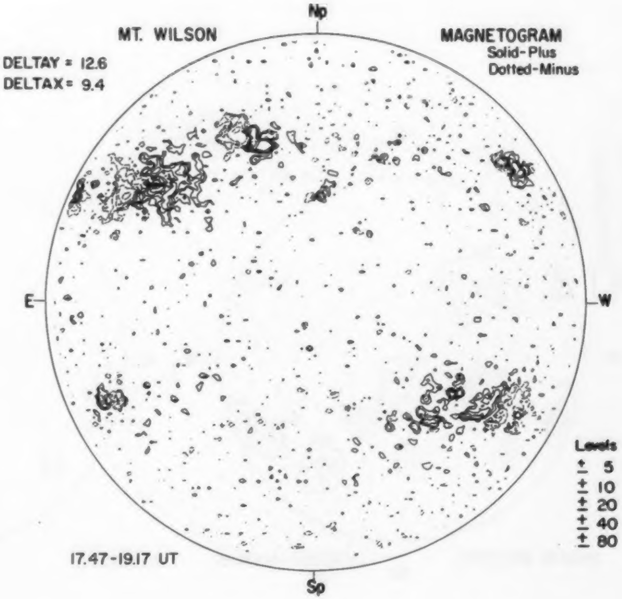
KITT PEAK MAGNETOGRAM
Bright- Plus
Dark - Minus



1648 UT

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

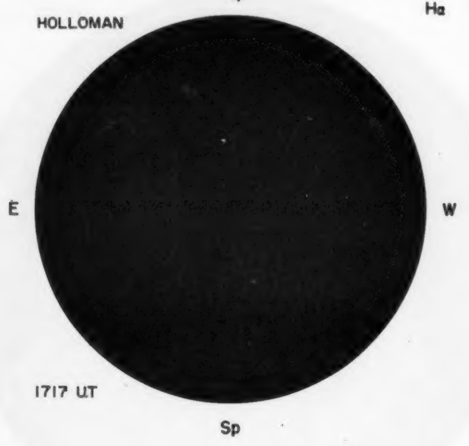
DELTAY = 12.6
DELTAX = 9.4

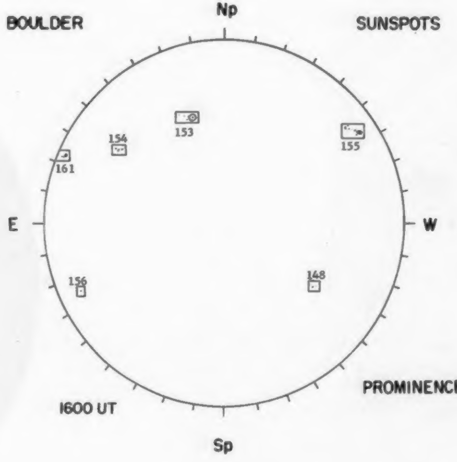


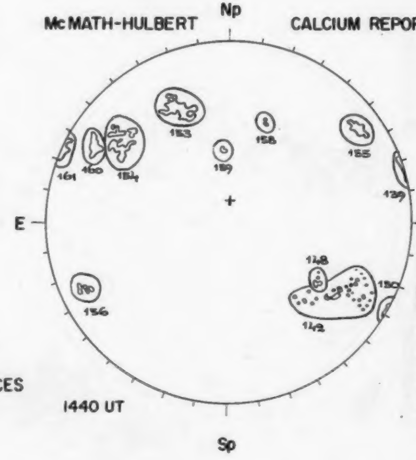
Levels
± 5
± 10
± 20
± 40
± 80

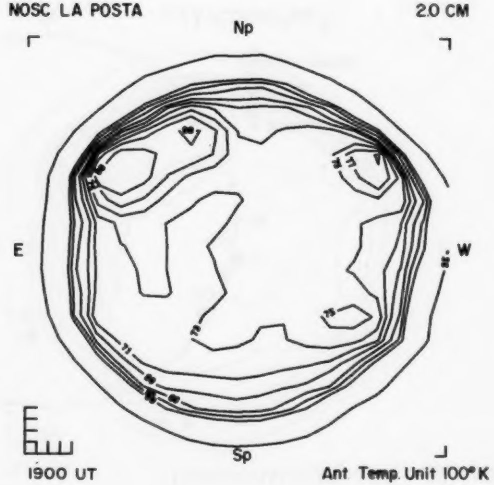
17.47-19.17 UT

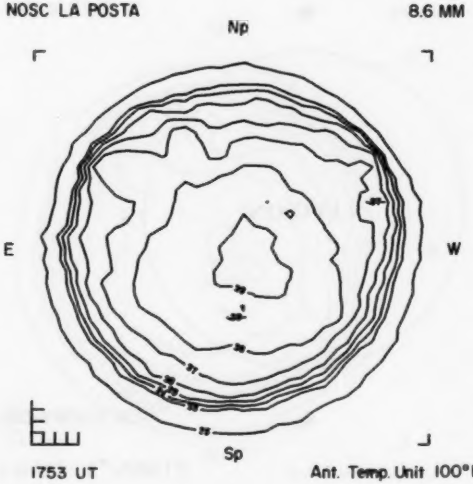
18


HOLLOMAN
Hα
Np
E
W
Sp
1717 UT


BOULDER
SUNSPOTS
PROMINENCES
Np
E
W
Sp
161
156
154
153
155
148
1600 UT

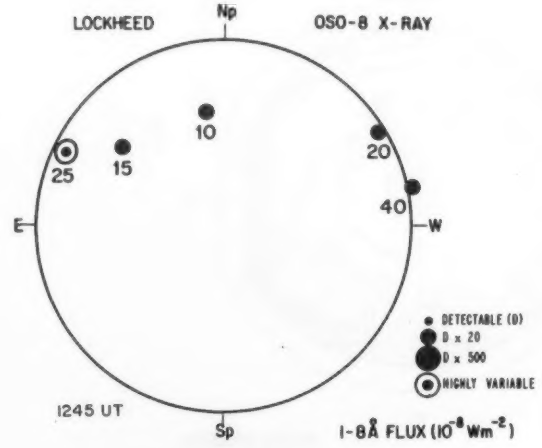

McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
153
158
159
155
139
161
160
154
156
148
150
149
1440 UT
FAIR
M
48 - 0300-2.5
53 - 2700-3.5
54 - 2500-3.0
55 - 1500-3.0
56 - 0600-2.5
60 - 2000-3.5
61 - 2800-3.5


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1900 UT
Ant. Temp. Unit 100°K


NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1753 UT
Ant. Temp. Unit 100°K

FEBRUARY 19, 1978 (P =-18.63, B_o =-6.99, L_o =295.11)

LOCKHEED OSO-8 X-RAY

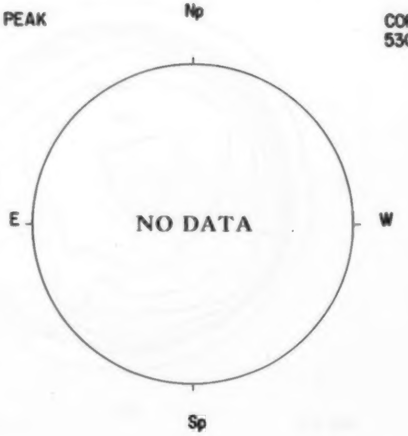


1245 UT

1-8Å FLUX (10^{-8} Wm^{-2})

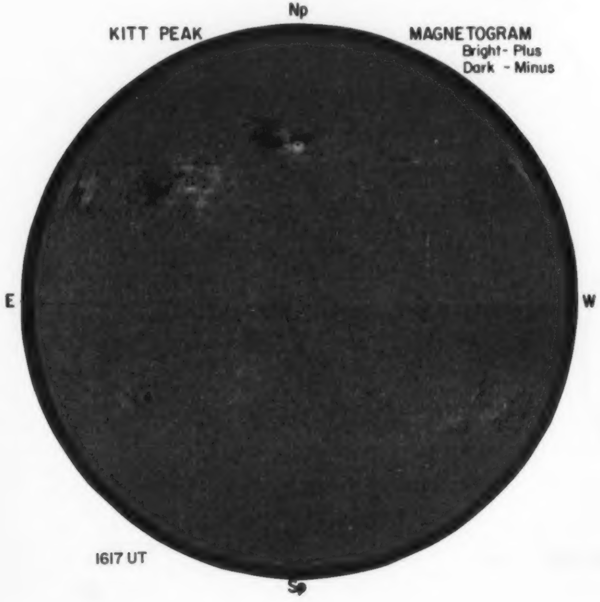
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright- Plus
Dark - Minus

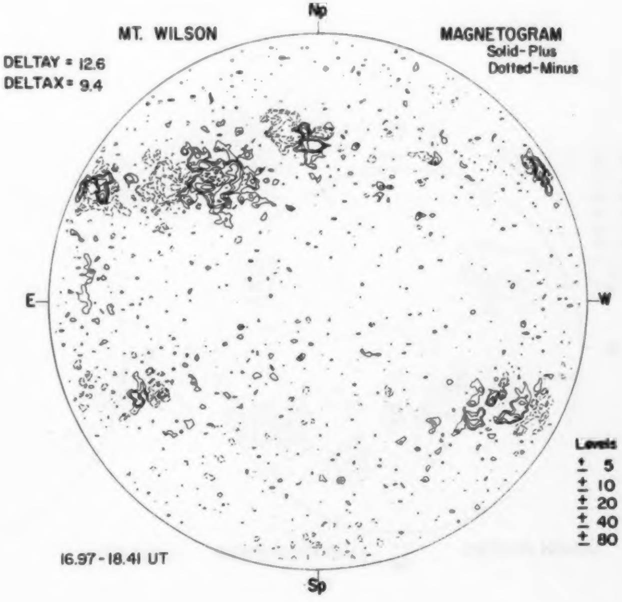


1617 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4

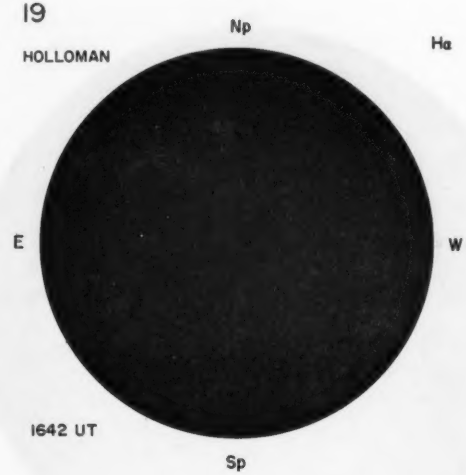


Levels
± 5
± 10
± 20
± 40
± 80

16.97-18.41 UT

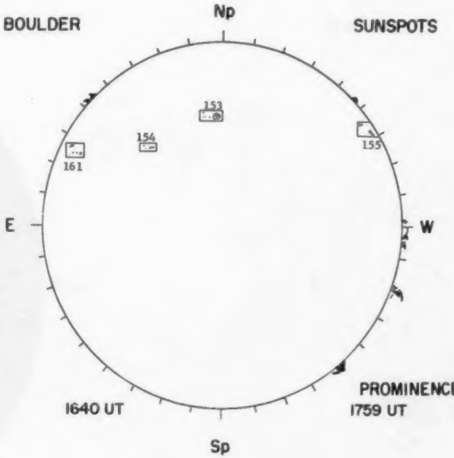
19

HOLLOMAN



1642 UT

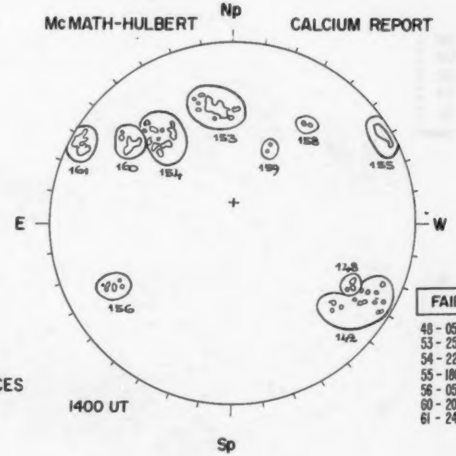
Hα BOULDER SUNSPOTS



1640 UT

PROMINENCES
1759 UT

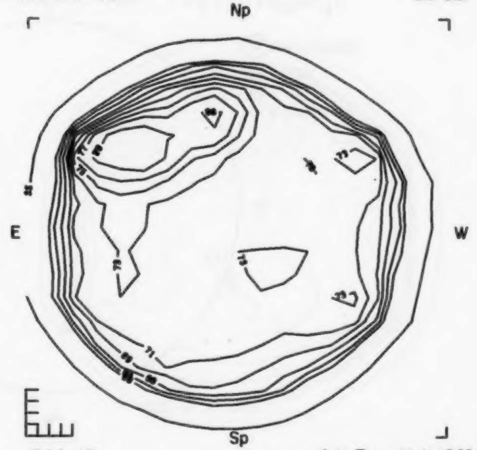
McMATH-HULBERT CALCIUM REPORT



1400 UT

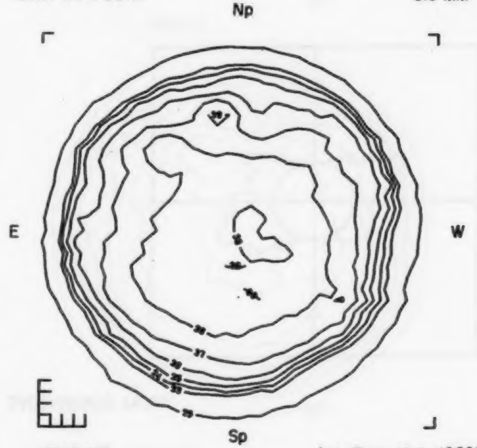
FAIR	D
48 - 0500-25	
53 - 2500-35	
54 - 2200-30	
55 - 1800-35	
56 - 0500-25	
60 - 2000-35	
61 - 2400-35	

NOSC LA POSTA 2.0 CM



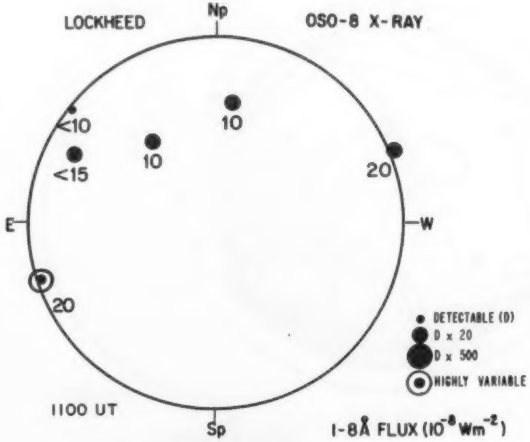
1944 UT Ant. Temp. Unit 100°K

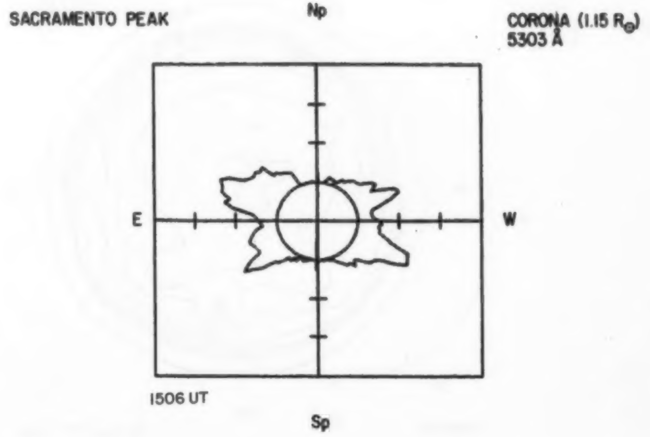
NOSC LA POSTA 8.6 MM

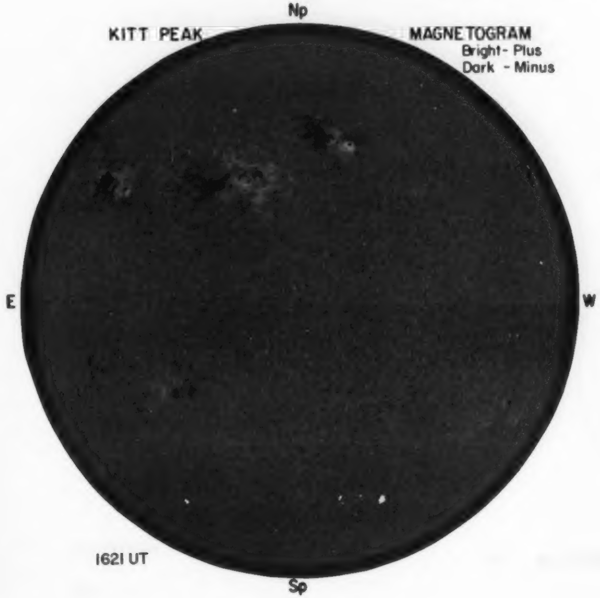


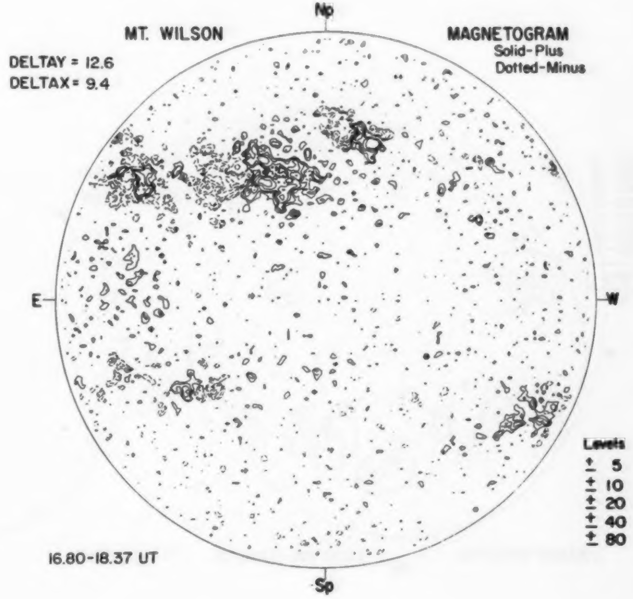
1843 UT Ant. Temp. Unit 100°K

FEBRUARY 20, 1978 (P =-18.95, B_0 =-7.02, L_0 =281.94)

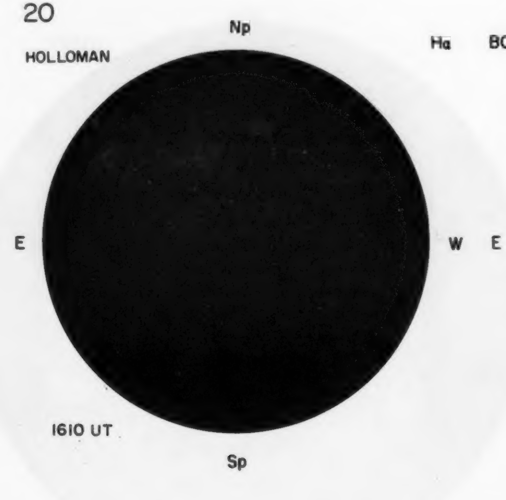


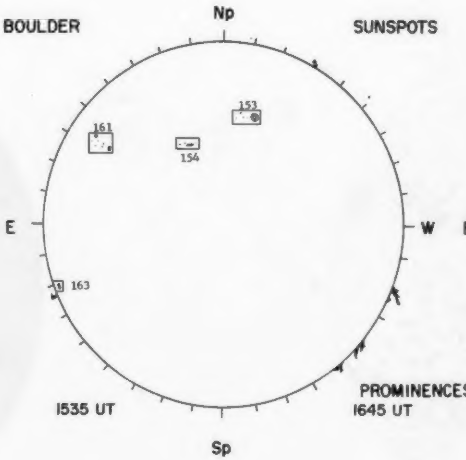


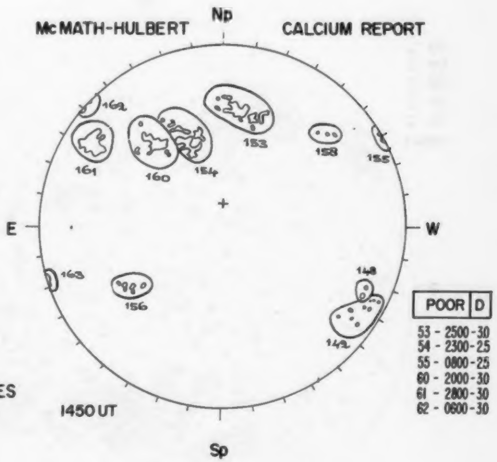


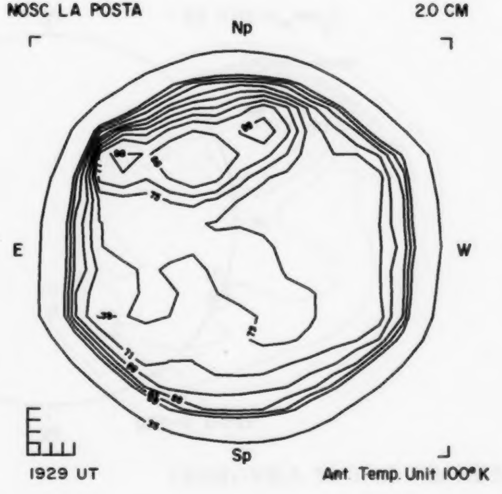


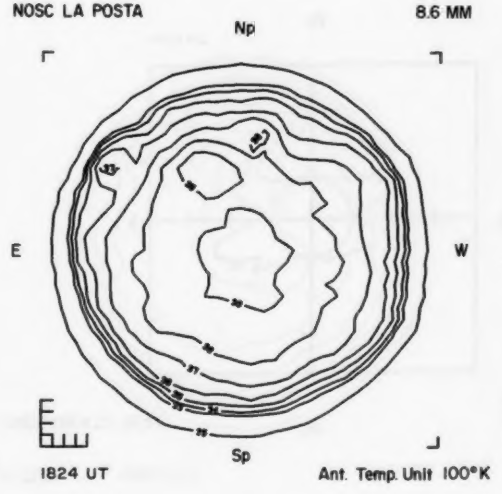
20


HOLLOMAN
Hα
Np
E
W
Sp
1610 UT

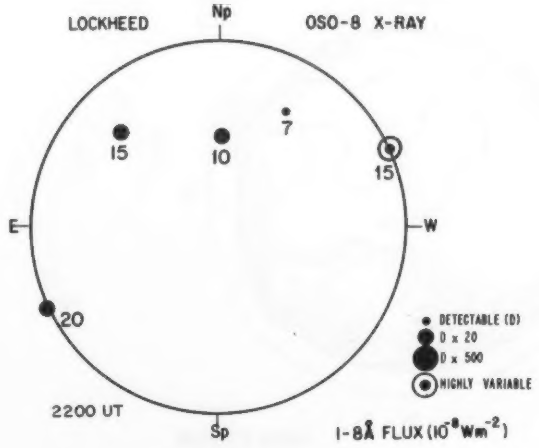

BOULDER
SUNSPOTS
Np
E
W
Sp
161
154
153
163
1535 UT
PROMINENCES
1645 UT

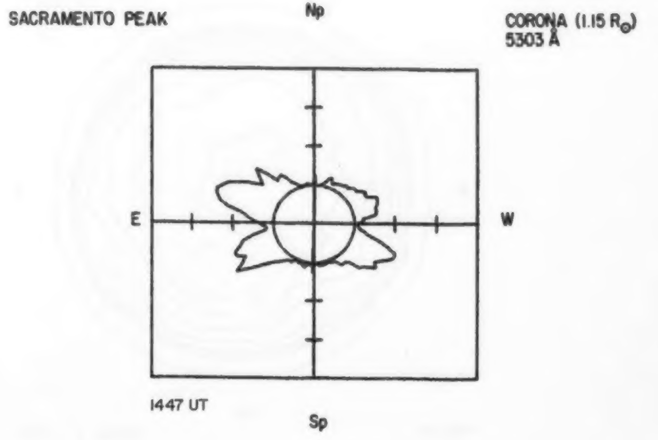

McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
162
161
160
154
153
158
155
163
156
148
142
1450 UT
POOR D
53 - 2500-30
54 - 2300-25
55 - 0800-25
60 - 2000-30
61 - 2800-30
62 - 0600-30

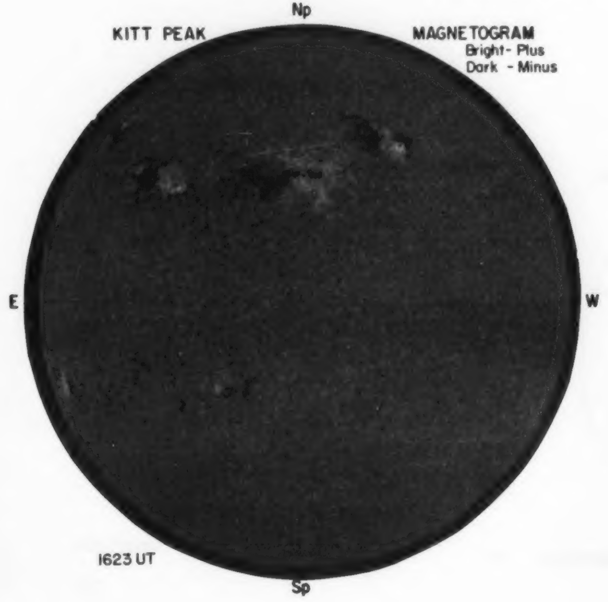

NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1929 UT
Ant. Temp. Unit 100°K

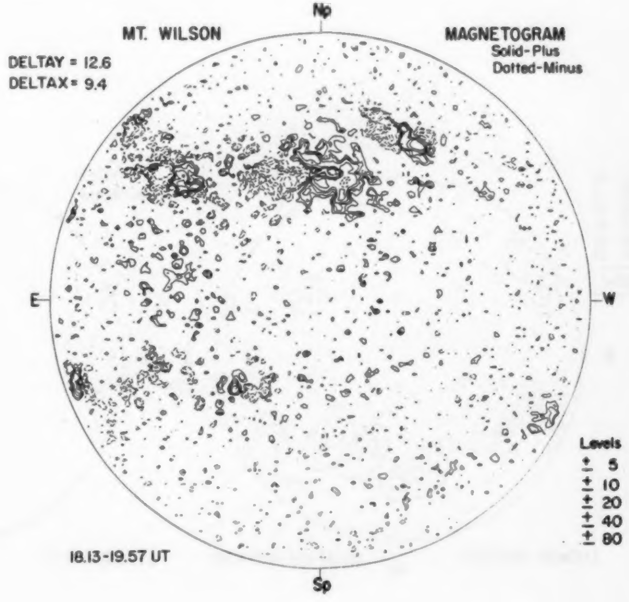

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1824 UT
Ant. Temp. Unit 100°K

FEBRUARY 21, 1978 (P =-19.25, B_o =-7.05, L_o =268.77)





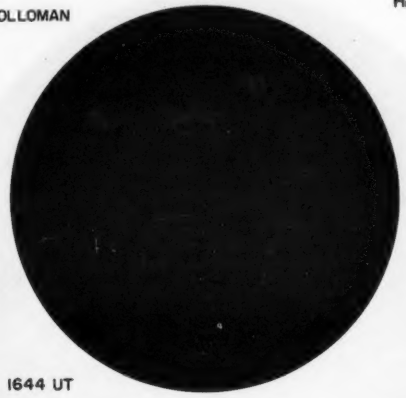




21

HOLLOMAN

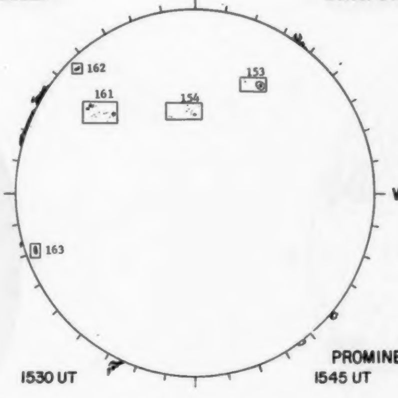
Hα



1644 UT

BOULDER

SUNSPOTS

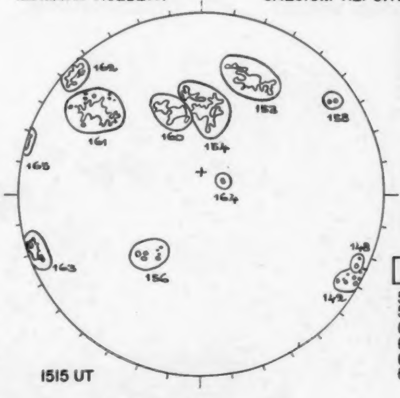


1530 UT

PROMINENCES
1545 UT

McMATH-HULBERT

CALCIUM REPORT

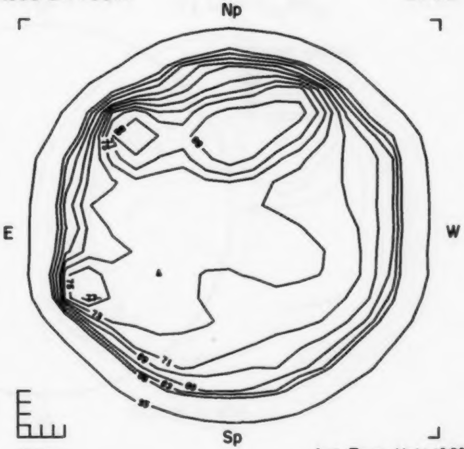


1515 UT

FAIR	M
53 - 2700 - 35	
54 - 2500 - 30	
60 - 1800 - 30	
61 - 3000 - 30	
62 - 1800 - 35	
63 - 2000 - 35	

NOSC LA POSTA

2.0 CM

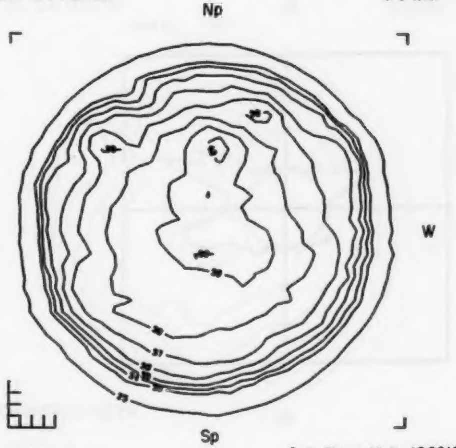


1921 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

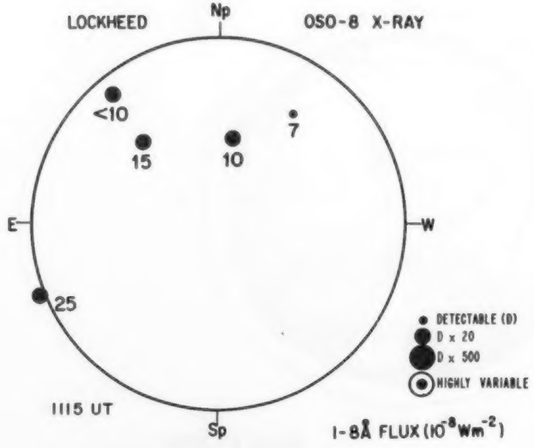
8.6 MM

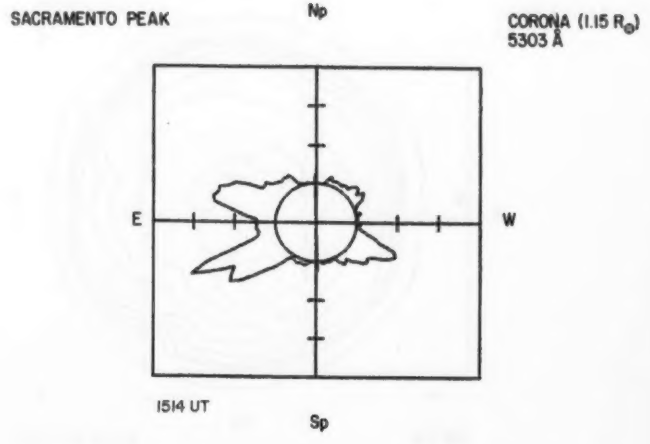


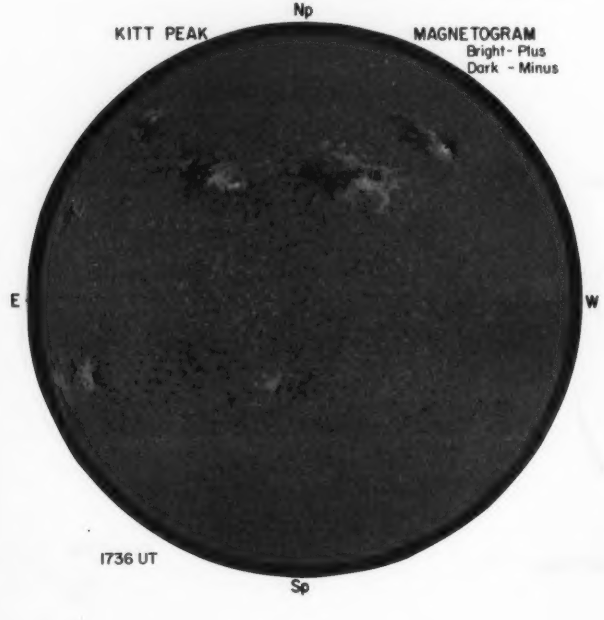
1822 UT

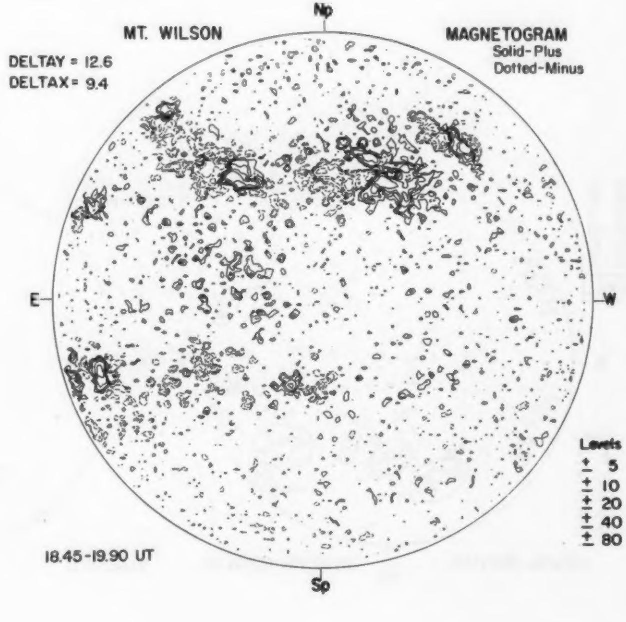
Ant. Temp. Unit 100°K

FEBRUARY 22, 1978 (P = -19.55, B_0 = -7.08, L_0 = 255.60)

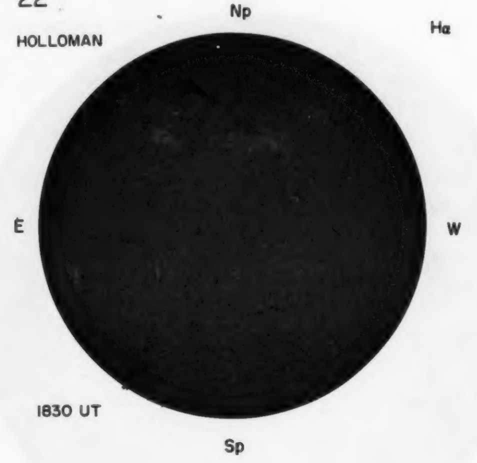


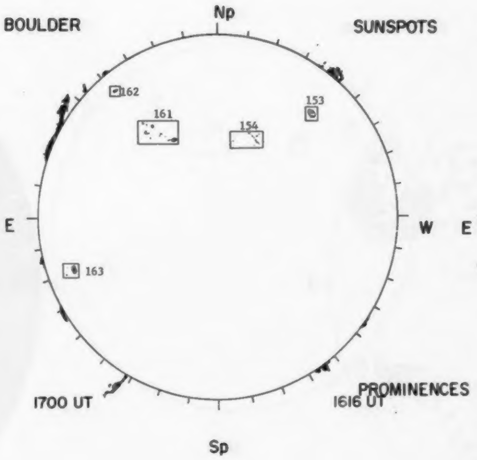


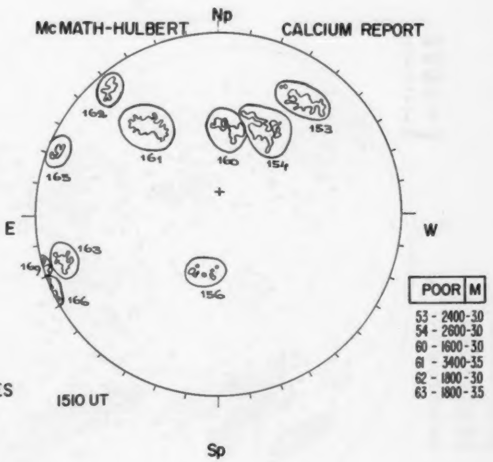


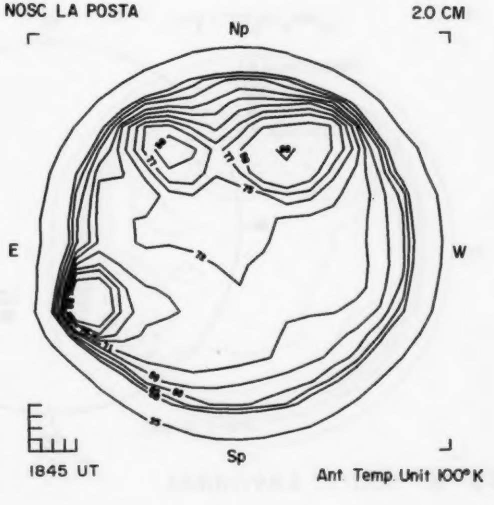


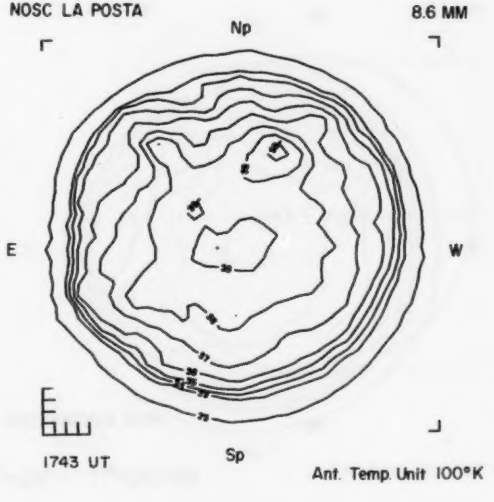
22


HOLLOMAN
Np
E
W
Sp
1830 UT


Hα BOULDER
Np
E
W
Sp
162
161
154
153
163
1700 UT
SUNSPOTS
PROMINENCES
1616 UT

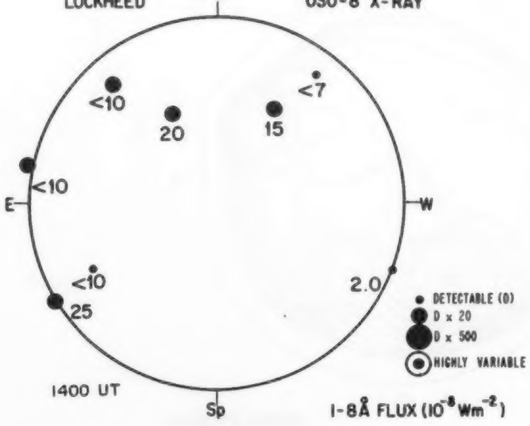

McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
162
161
160
154
153
165
163
164
166
156
1510 UT
POOR M
53 - 2400-30
54 - 2600-30
60 - 1600-30
61 - 3400-35
62 - 1800-30
63 - 1800-35


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1845 UT
Ant. Temp. Unit 100°K


NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1743 UT
Ant. Temp. Unit 100°K

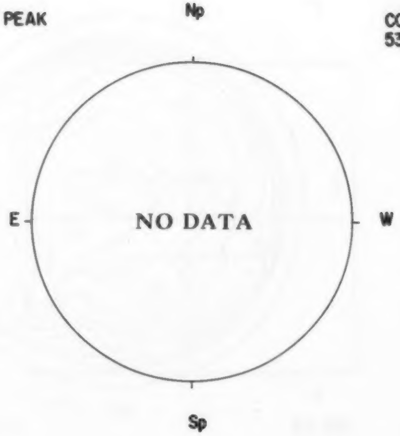
FEBRUARY 23, 1978 (P =-19.85, B_o =-7.11, L_o =242.43)

LOCKHEED — OSO-8 X-RAY

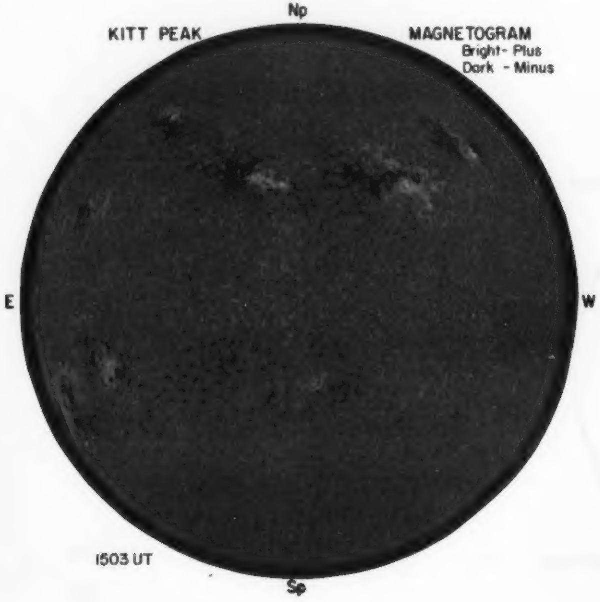


1400 UT — 1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



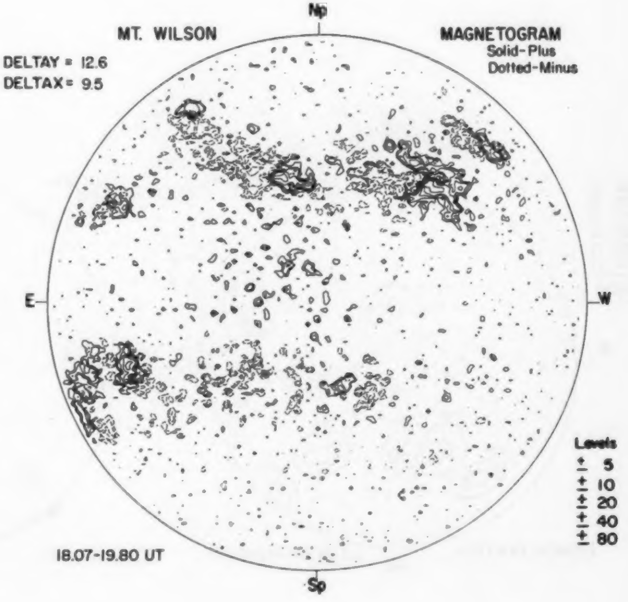
KITT PEAK — MAGNETOGRAM
Bright- Plus
Dark - Minus



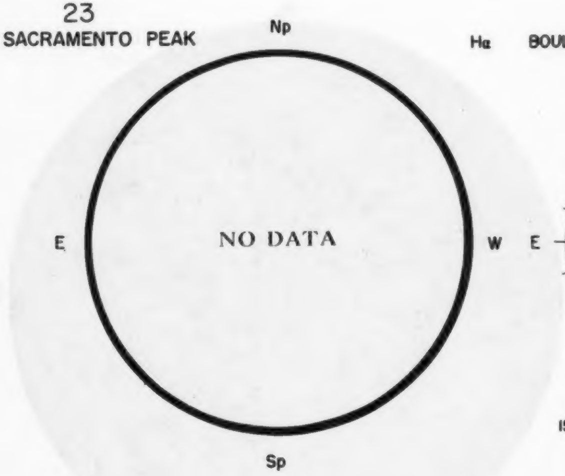
1503 UT

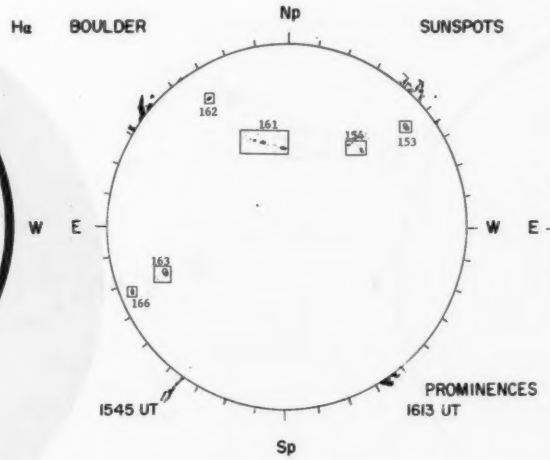
MT. WILSON — MAGNETOGRAM
Solid-Plus
Dotted-Minus

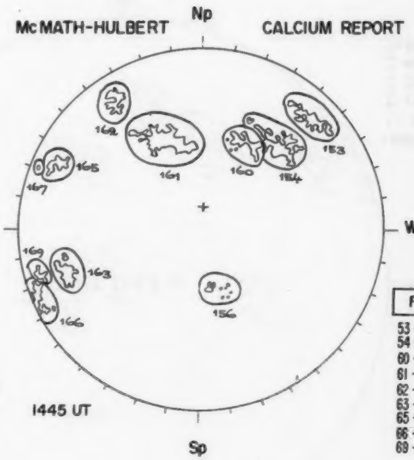
DELTAY = 12.6
DELTAX= 9.5



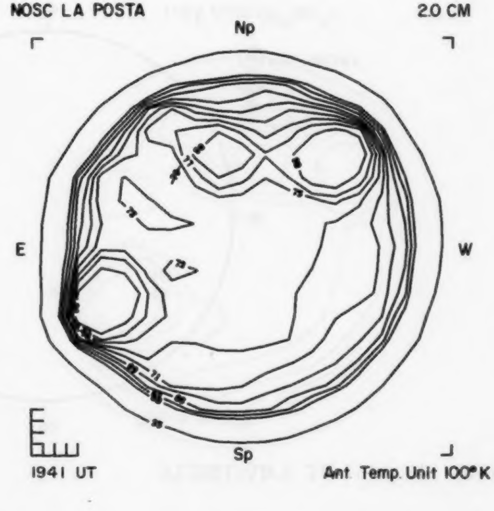
18.07-19.80 UT

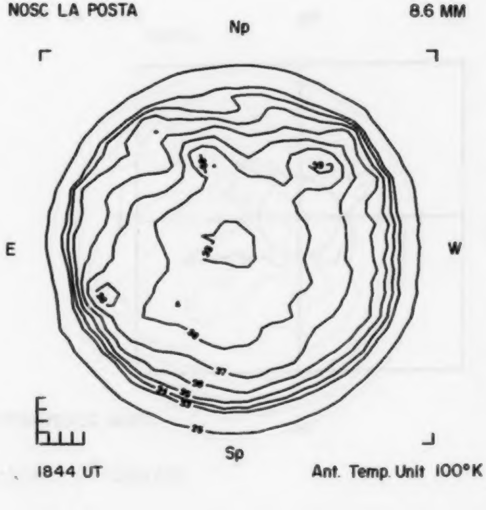






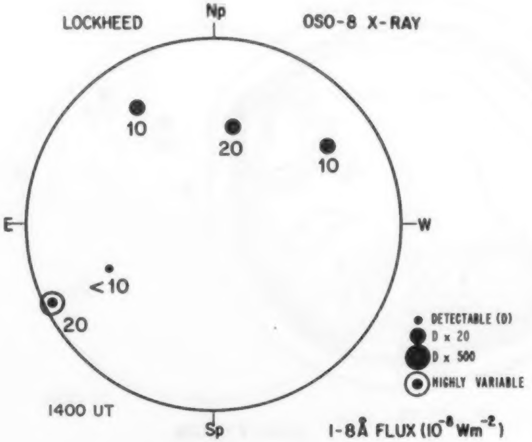
FAIR	M
53 - 2400	30
54 - 2500	30
60 - 1700	30
61 - 3400	35
62 - 2000	30
63 - 2000	35
65 - 1300	25
66 - 2800	30
69 - 0800	25





FEBRUARY 24, 1978 (P =-20.13, B_0 =-7.13, L_0 =229.26)

LOCKHEED OSO-8 X-RAY

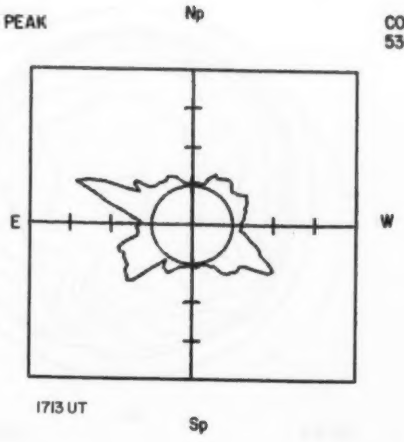


1400 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

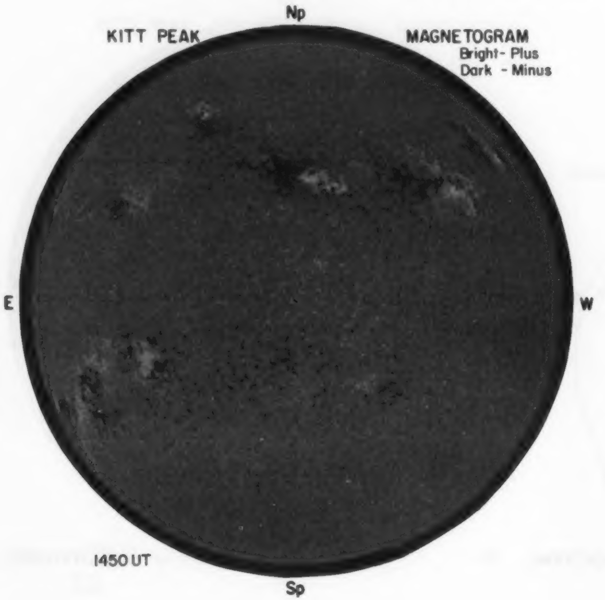
CORONA (1.15 $R_{\odot}$)
5303 Å



1713 UT

KITT PEAK

MAGNETOGRAM
Bright- Plus
Dark - Minus

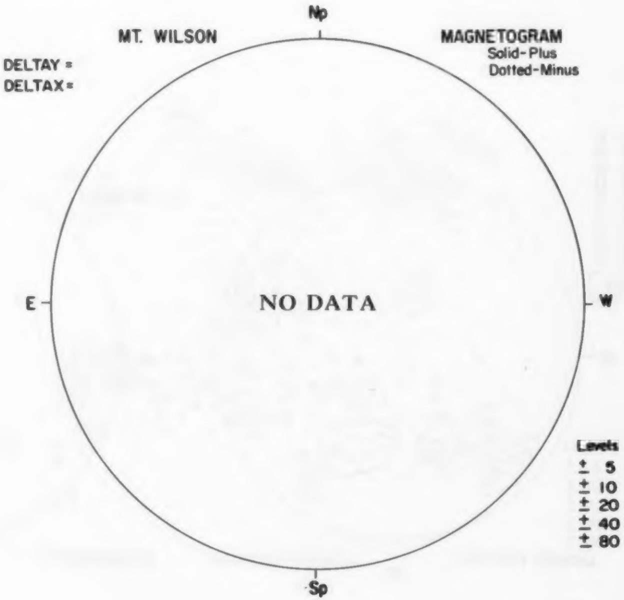


1450 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX=

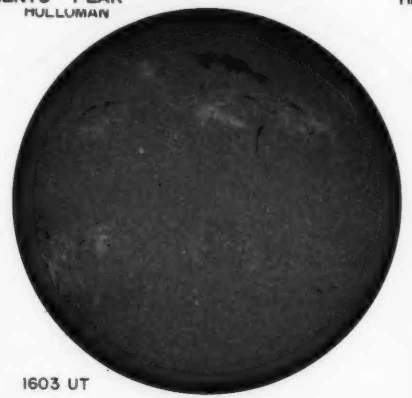


24

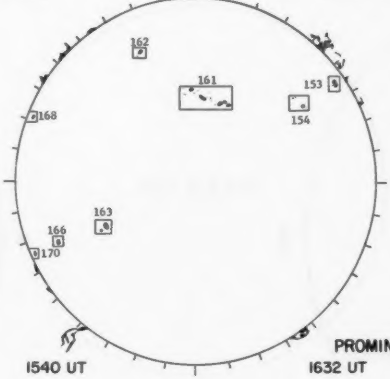
SACRAMENTO PEAK

HOLLOMAN

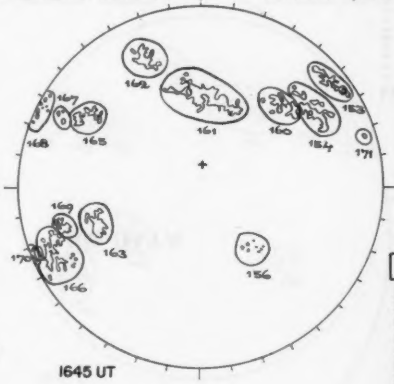
Hα



BOULDER SUNSPOTS

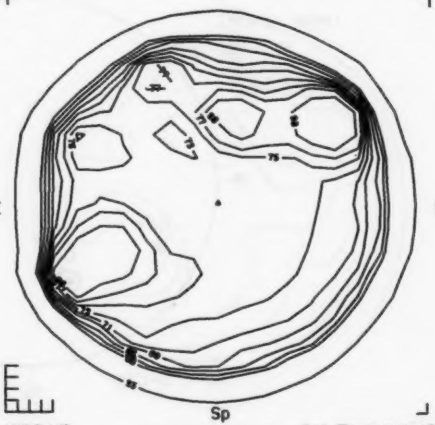


McMATH-HULBERT CALCIUM REPORT

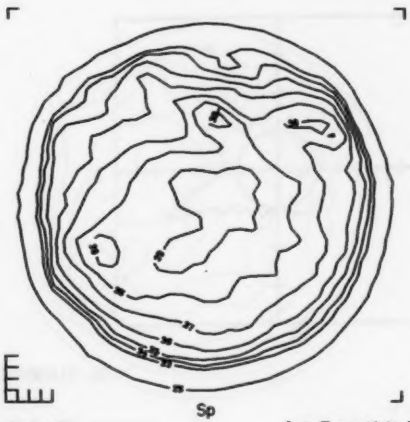


FAIR	M
53 -	2400-25
54 -	2600-30
60 -	1700-25
61 -	3600-35
62 -	1900-30
63 -	1600-30
66 -	3200-30
70 -	1000-30

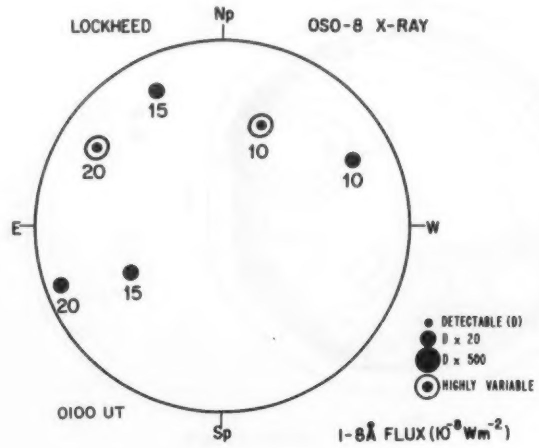
NOSC LA POSTA 2.0 CM

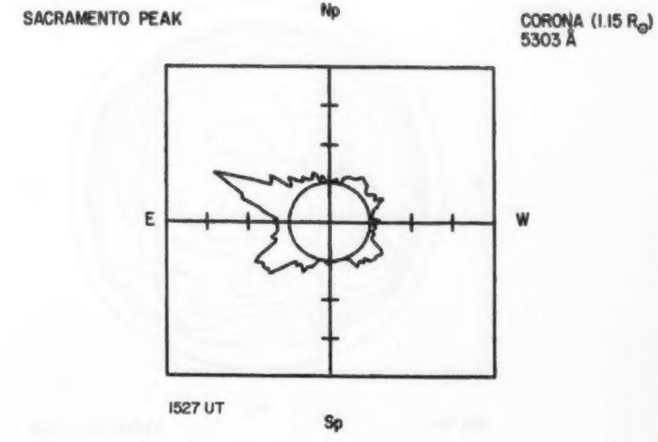


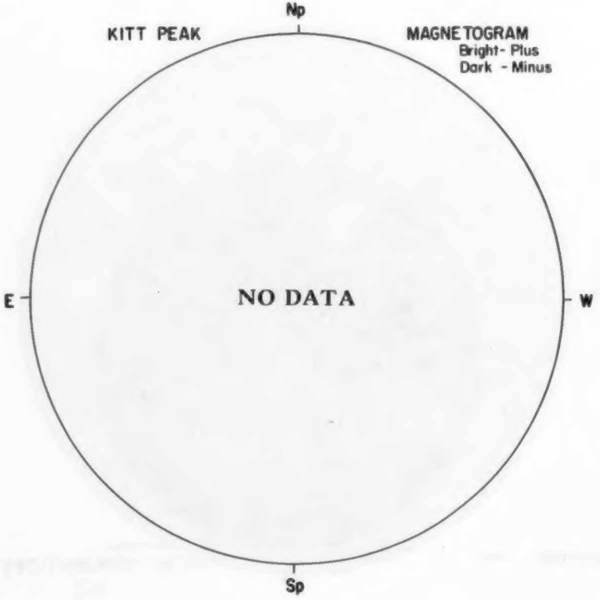
NOSC LA POSTA 8.6 MM

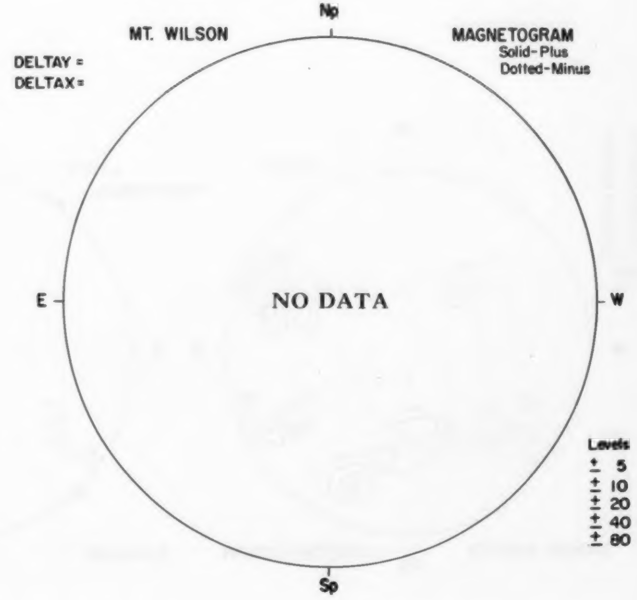


FEBRUARY 25, 1978 (P =-20.42, B_0 =-7.15, L_0 =216.09)



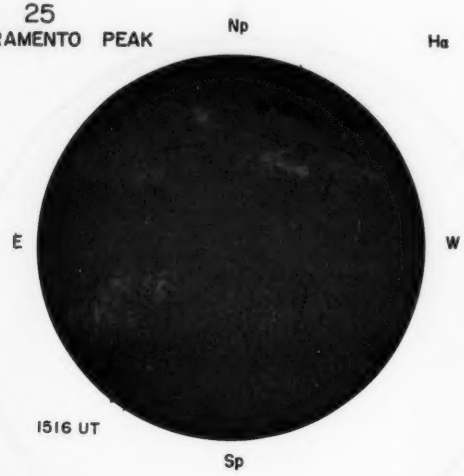




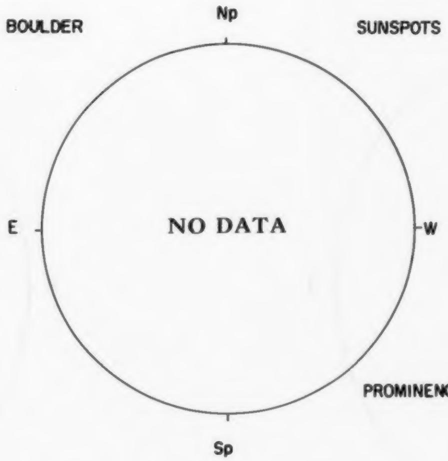


25

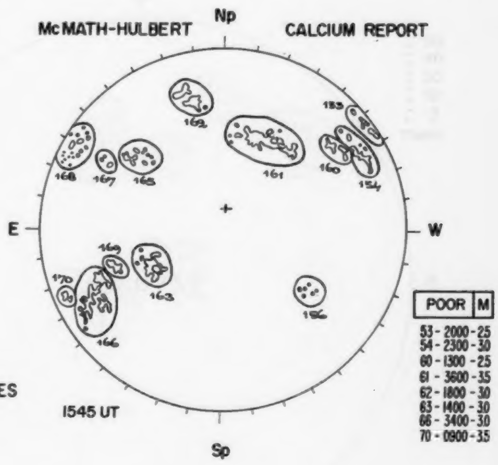
SACRAMENTO PEAK Hα



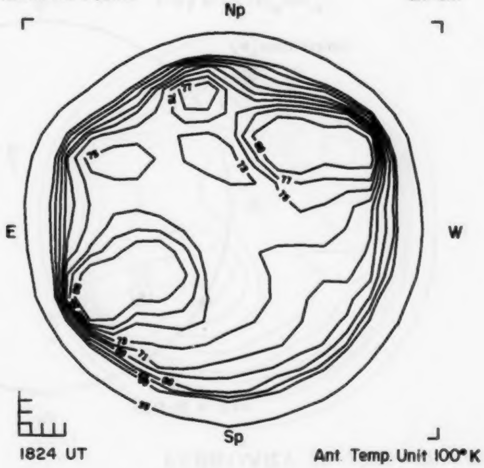
BOULDER SUNSPOTS



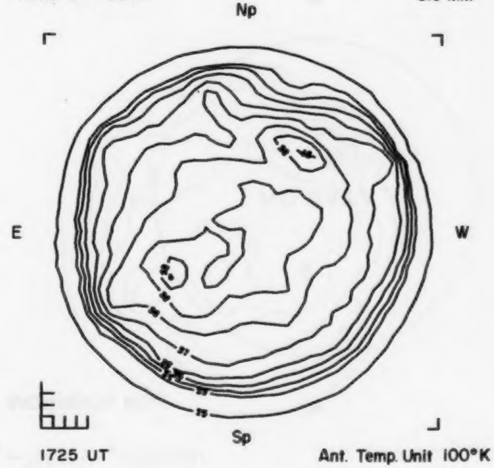
McMATH-HULBERT CALCIUM REPORT



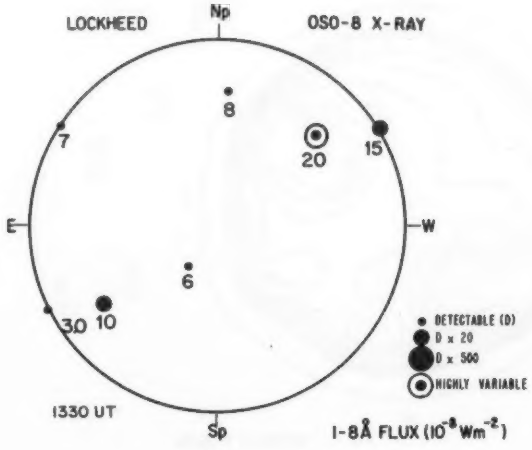
NOSC LA POSTA 2.0 CM

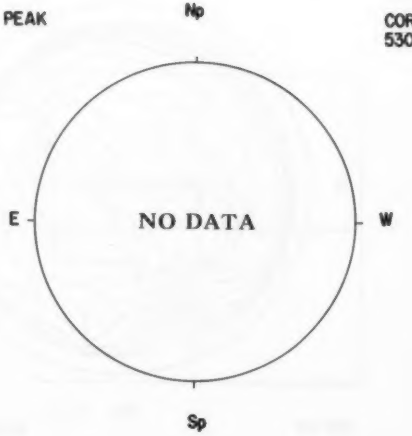


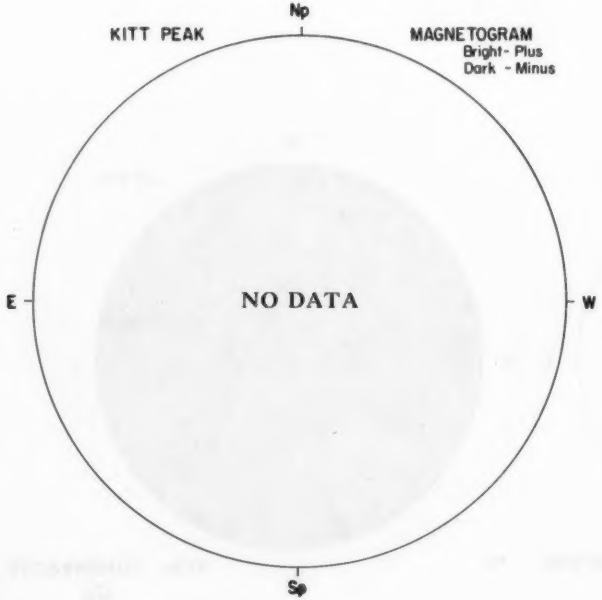
NOSC LA POSTA 8.6 MM

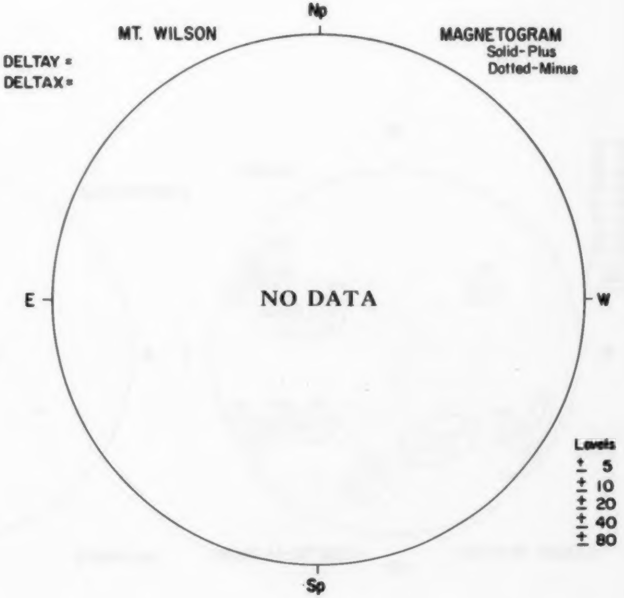


FEBRUARY 26, 1978 (P =-20.69, B_o =-7.17, L_o =202.92)



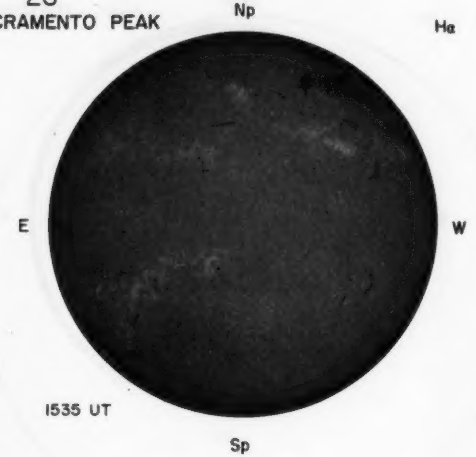




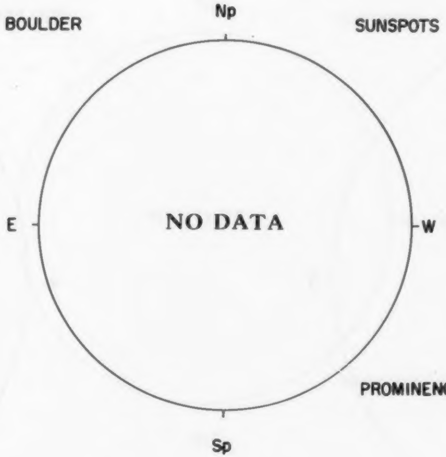


26

SACRAMENTO PEAK

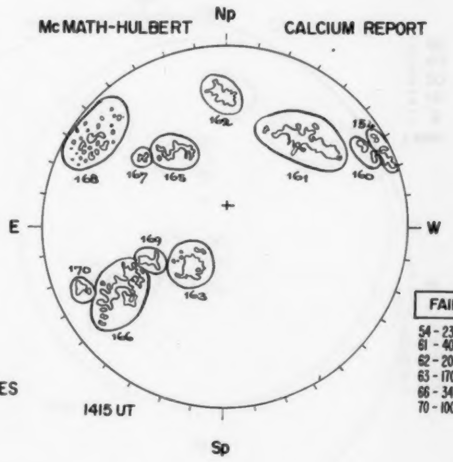


Hα BOULDER

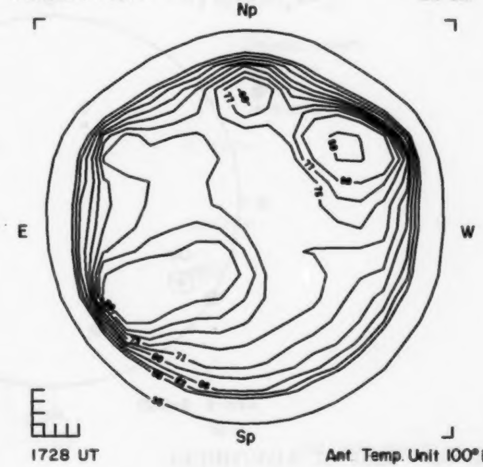


SUNSPOTS PROMINENCES

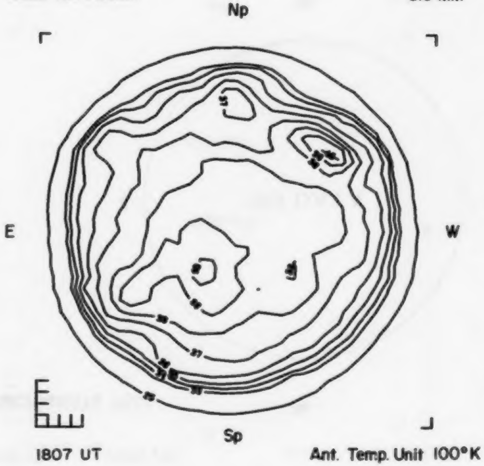
McMATH-HULBERT CALCIUM REPORT



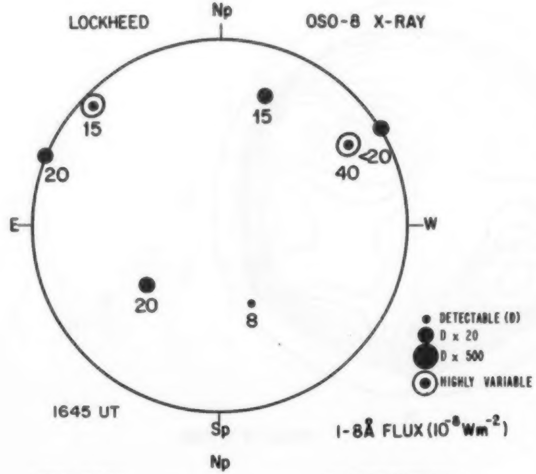
NOSC LA POSTA 2.0 CM

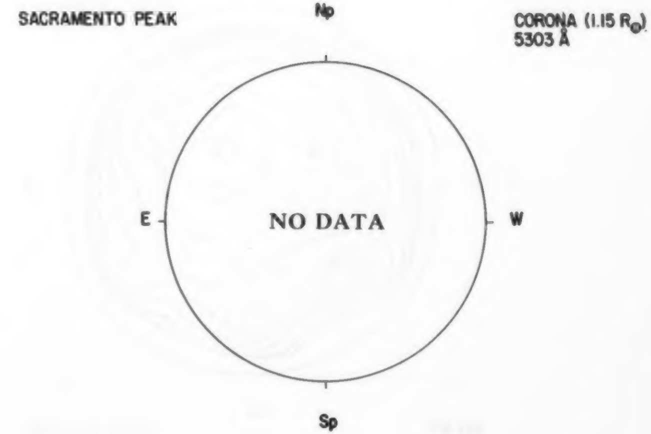


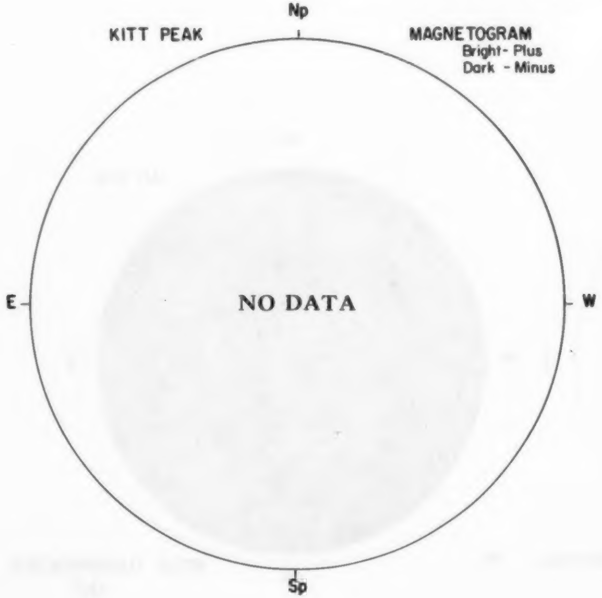
NOSC LA POSTA 8.6 MM

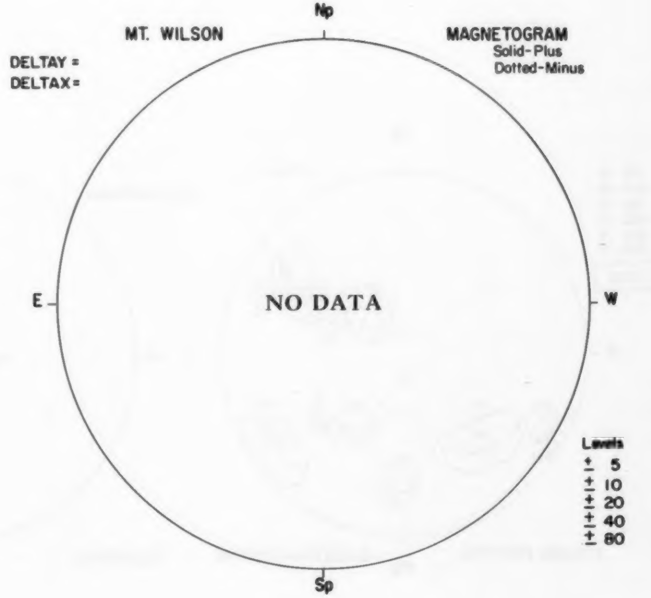


FEBRUARY 27, 1978 ($P = -20.96$, $B_0 = -7.19$, $L_0 = 189.75$)









27
SACRAMENTO PEAK

Np

E W

Sp

Hα BOULDER

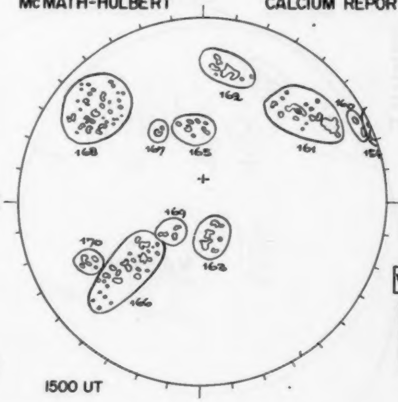
Np

E W

Sp

SUNSPOTS McMATH-HULBERT CALCIUM REPORT

Np

E  W

Sp

PROMINENCES

1500 UT

V POOR	D
61 - 3800 - 30	
62 - 2000 - 30	
63 - 1500 - 25	
68 - 3000 - 25	
70 - 0800 - 25	

NOSC LA POSTA 2.0 CM

Np

NO DATA

E WEATHER W

Sp

---- UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

Np

NO DATA

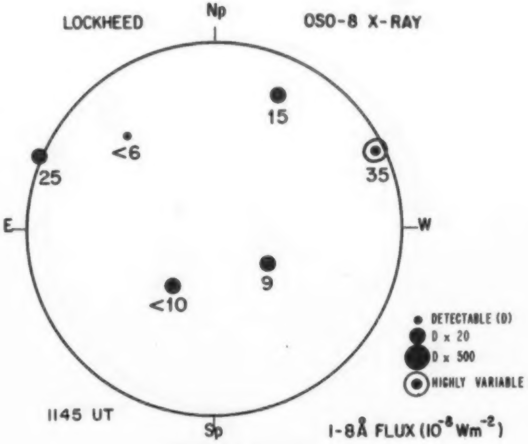
E WEATHER W

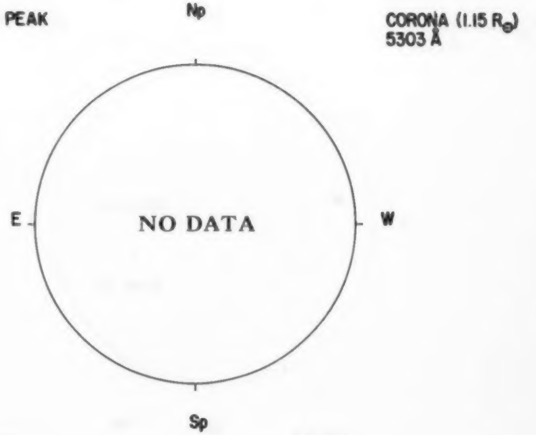
Sp

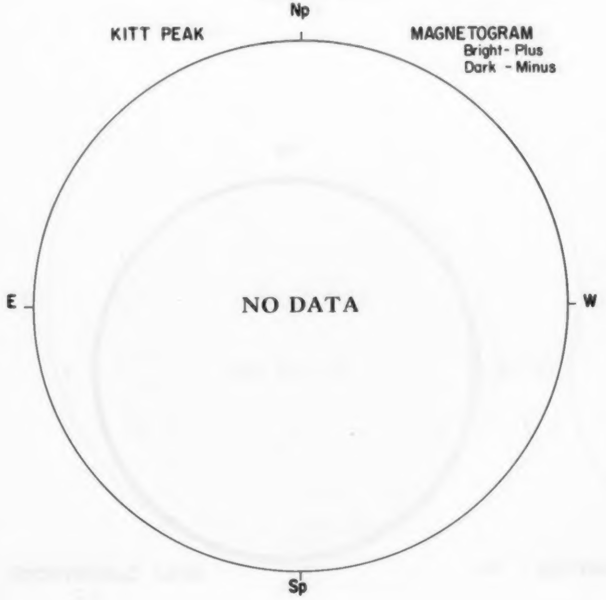
---- UT

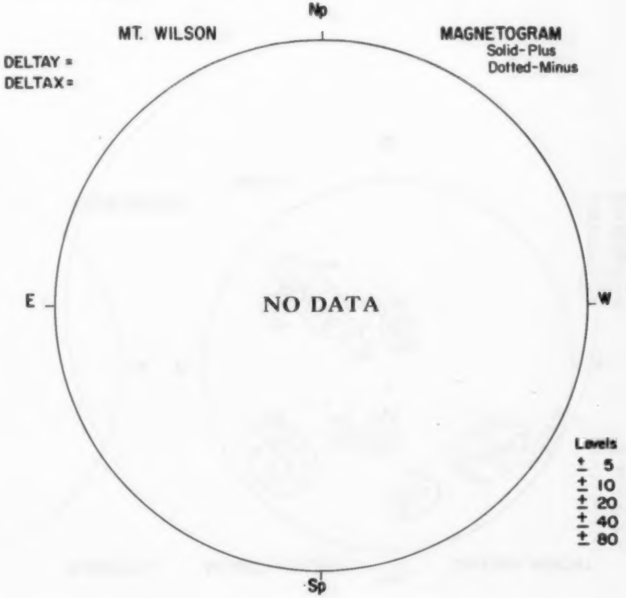
Ant. Temp. Unit 100°K

FEBRUARY 28, 1978 (P = -21.23, B_o = -7.20, L_o = 176.57)



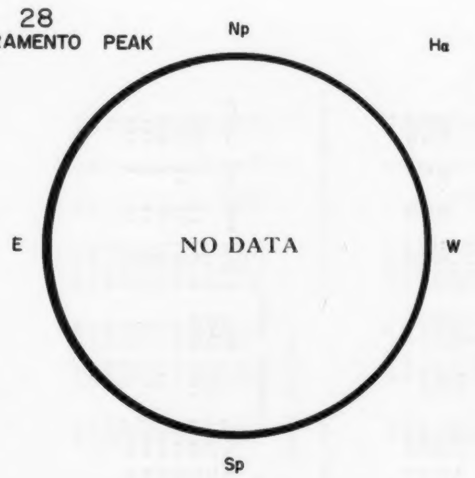




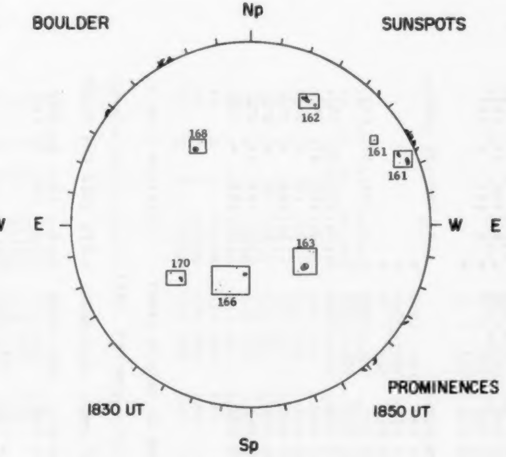


28

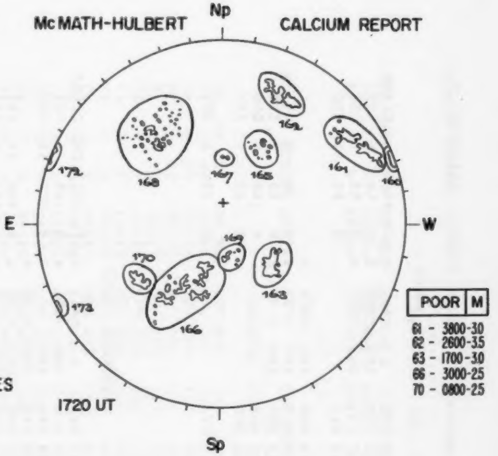
SACRAMENTO PEAK Hα



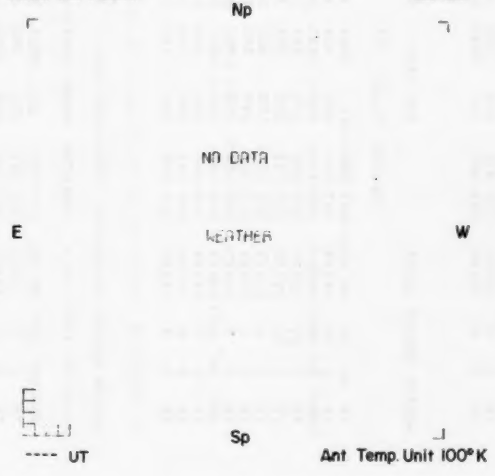
BOULDER SUNSPOTS



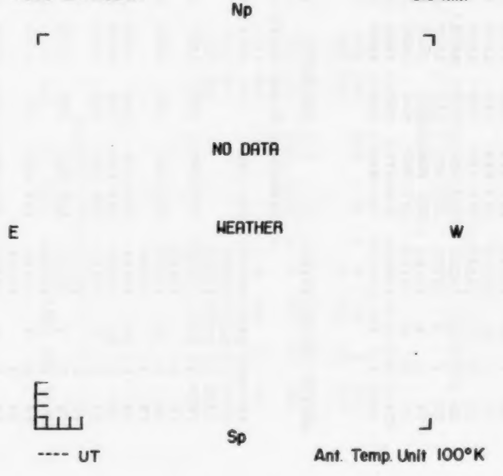
McMATH-HULBERT CALCIUM REPORT



NOSC LA POSTA 2.0 CM



NOSC LA POSTA 8.6 MM



REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15123 CMP DATE 1.2 RETURN OF NEW PART OF REGION 15Ø83 ROTATION 2

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	1	28	15123	S17 E48	166	900	3.5	19941	S17 E48	166	(BF)	3	B	40	4	CSO
78	1	29	15123	S17 E35	167	1200	3.0	19941	S17 E34	167	(BF)	4	B	50	2	CSO
78	1	30	15123	S17 E19	167	1500	3.0		S17 E17				M	80	12	DSO
78	1	31	15123	S17 E08	168	2000	3.5									
78	2	1	15123	S17 W05	168	1600	3.0	19941	S18 W04	166	(BF)	3				
78	2	2	15123	S17 W18	167	1800	3.0	19941	S16 W19	167	(B)	2	B	20	6	BXI
78	2	3	15123	S17 W31	167	1500	3.0	19941	S17 W32	168	(B)	2	M	10	2	BXO
78	2	4	15123	S17 W44	168	2000	3.0		S15 W48				B	150	5	DSO
78	2	5	15123	S17 W57	166	1600	3.0		S16 W59				B	10	1	AXX
78	2	6	15123	S17 W71	168	1800	3.0									
78	2	7	15123	S17 W84	167	1100	2.5		S17 W78				M	20	2	BXO

MCMATH REGION 15124 CMP DATE 1.9

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	1	26	15124					19939	S28 E76	165	(AP)	4	M	140	1	HSX
78	1	27	15124					19939	S28 E61	166	AP	3	M	200	10	DSO
78	1	28	15124	S29 E57	157	4300	3.5	19939	S27 E50	164	(B)	4				
78	1		15124					19940	S31 E55	159	(B)	4	B	390	12	ESI
78	1	29	15124	S28 E44	158	4500	3.5	19939	S27 E37	164	(B)	4	B	180	5	ESI
78	1		15124					19940	S32 E40	161	(B)	4				
78	1	30	15124	S29 E26	160	4500	3.5									
78	1	31	15124	S29 E16	160	4500	3.5		S29 E23				M	290	29	ESI
78	2	1	15124	S29 E04	159	4300	3.0	19939	S26 W03	165	(BP)	5				
78	2		15124					19940	S30 W02	164	(BP)	4				
78	2	2	15124	S29 W10	159	4500	3.0	19939	S26 W16	164	(D)	5				
78	2		15124					19940	S29 W16	164	(BP)	4	B	220	27	ESI
78	2	3	15124	S30 W22	158	4300	3.0	19939	S26 W28	164	(BP)	4				
78	2		15124					19940	S29 W28	164	(BP)	4	M	360	33	ESI
78	2	4	15124	S30 W34	158	3900	3.0		S27 W40				B	280	17	FKI
78	2	5	15124	S30 W47	156	3000	3.5		S22 W43				B	10	2	BXX
78	2		15124						S27 W55				B	120	4	DSO
78	2	6	15124	S30 W60	157	3300	3.0		S25 W57				R	30	6	BXO
78	2		15124						S30 W68				R	170	10	DSO
78	2	7	15124	S30 W73	156	3200	3.0		S29 W73				M	180	4	DSO
78	2	8	15124	S30 W85	155	2800	2.5									

MCMATH REGION 15125 CMP DATE 2.0 RETURN OF REGION 15087 ROTATION 2 OR 3

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	1	28	15125	N17 E58	156	400	3.5									
78	1	29	15125	N17 E45	157	700	3.5	19943	N15 E44	157	(B)	4	B	40	2	BXO
78	1	30	15125	N15 E28	158	800	2.5		N15 E25				M	30	5	CAO
78	1	31	15125	N16 E18	158	800	3.0									
78	2	1	15125	N16 E05	158	600	3.0	19943	N14 E02	160	(BP)	4				
78	2	2	15125	N15 W10	159	800	2.5	19943	N14 W11	159	(B)	4	B	30	10	CSO
78	2	3	15125	N15 W23	159	900	2.5	19943	N14 W23	159	(B)	4	M	60	5	DSO
78	2	4	15125	N15 W35	159	900	2.5		N13 W36				B	10	2	BXO
78	2	5	15125	N15 W48	157	600	2.5									
78	2	6	15125	N15 W61	158	700	2.5									
78	2	7	15125	N16 W75	158	800	2.5									

MCMATH REGION 15136 CMP DATE 2.1

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	2	15136	N32 W07	156	300	2.5	19947	N32 W07	155	(AP)	3				
78	2	3	15136	N33 W16	152	1000	4.0	19947	N32 W17	153	(BY)	3	M	20	2	CRO
78	2	4	15136	N33 W28	152	1200	3.5		N32 W29				B	90	12	CRI
78	2	5	15136	N33 W42	151	1500	3.0		N32 W39				B	10	1	AXX
78	2	6	15136	N34 W55	152	1500	3.0		N30 W56				R	10	1	AXX
78	2	7	15136	N34 W68	151	1500	3.0		N32 W61				M	10	1	AXX
78	2	8	15136	N34 W81	151	1000	2.0									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15144 CMP DATE 2.5

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
			CALCIUM PLAGE DATA						SUNSPOT DATA							
78	2	7	15144	S43 W68	151	300	2.0									
78	2	8	15144	S43 W79	149	100	1.0									

MCMATH REGION 15126 CMP DATE 3.1 RETURN ØF REGION 15089 ROTATION 2

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
			CALCIUM PLAGE DATA						SUNSPOT DATA							
78	1	28	15126	N25 E72	142	3000	3.5	19942	N19 E69	145	(B	3	B	120	2	DSO
78	1	29	15126	N25 E59	143	4800	3.5	19942	N18 E56	145	(B)	4	B	80	3	CSI
78	1	30	15126	N24 E42	144	4500	3.0		N20 E44				M	120	11	ESO
78	1	31	15126	N25 E32	144	4900	3.5									
78	2	1	15126	N25 E20	143	4600	3.5	19942	N19 E19	143	(Y)	4				
78	2	2	15126	N24 E05	144	4600	3.5	19942	N20 E05	143	(BY)	4	B	300	38	EAI
78	2	3	15126	N23 W08	144	4300	3.5	19942	N19 W08	144	(BY)	4				
78	2	4	15126	N23 W20	144	4300	3.5		N18 W20				B	280	12	EKI
78	2	5	15126	N23 W32	141	4300	3.5		N18 W34				B	120	5	DHO
78	2	6	15126	N23 W45	142	4300	3.0		N18 W47				R	140	13	DAO
78	2	7	15126	N23 W59	142	4500	3.0		N20 W56				M	190	4	DSO
78	2	8	15126	N23 W72	142	4500	3.0	19942	N18 W78	147	(AP)	3	M	60	1	HSX
78	2	9	15126	N24 W85	142	3000	2.0									

MCMATH REGION 15130 CMP DATE 3.4

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
			CALCIUM PLAGE DATA						SUNSPOT DATA							
78	1	30	15130	S28 E51	135	300	3.5									
78	1	31	15130	S26 E36	140	600	3.0									
78	2	1	15130	S26 E23	140	500	3.0	19944	S27 E21	141	(B)	3				
78	2	2	15130	S26 E09	140	500	3.0	19944	S27 E10	138	(B)	2	B	10	3	BXO
78	2	3	15130	S27 W03	139	400	3.0									
78	2	4	15130	S26 W16	140	400	2.5									
78	2	5	15130	S26 W29	138	300	2.5									
78	2	6	15130	S26 W41	138	400	2.5									
78	2	7	15130	S26 W54	137	500	2.5									
78	2	8	15130	S26 W66	136	400	2.5									
78	2	9	15130	S25 W79	136	400	2.0									

MCMATH REGION 15129 CMP DATE 3.5

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
			CALCIUM PLAGE DATA						SUNSPOT DATA							
78	1	29	15129	N13 E65	137	200	1.0									
78	1	30	15129	N12 E50	136	200	1.0									
78	1	31	15129	N13 E38	138	200	1.5									
78	2	1	15129	N13 E24	139	200	1.5									
78	2	2	15129	N13 E11	138	400	2.0	19948	N14 E11	137	(AF)	2				
78	2	3	15129	N13 W02	138	300	1.5		N20 E01				M	190	30	EAI
78	2	4	15129	N13 W15	139	300	1.5									

MCMATH REGION 15128 CMP DATE 4.6 RETURN OF REMNANTS OF REGION 15Ø92 ROTATION 2

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
			CALCIUM PLAGE DATA						SUNSPOT DATA							
78	1	29	15128	N15 E80	122	400	2.0									
78	1	30	15128	N14 E64	122	400	1.0		N14 E66				M	10	1	AXX
78	2	1	15128	N16 E41	122	400	1.0									
78	2	2	15128	N15 E25	124	600	1.5									
78	2	3	15128	N15 E13	123	500	1.0		N13 E07				M	10	1	AXX
78	2	4	15128	N15 E00	124	400	1.0									
78	2	5	15128	N15 W13	122	300	1.5									
78	2	6	15128	N15 W26	123	300	1.0									
78	2	7	15128	N15 W39	122	300	1.0									
78	2	8	15128	N15 W52	122	300	1.0									
78	2	9	15128	N15 W65	122	300	1.0									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15133 CMP DATE 5.1

CALCIUM PLAGE DATA — SUNSPOT DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	1	31	15133	S13	E59	117	100	1.5										

MCMATH REGION 15145 CMP DATE 6.1

CALCIUM PLAGE DATA — SUNSPOT DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	7	15145	N34	W20	103	100	1.0										
78	2	8	15145	N34	W33	103	100	2.0										

MCMATH REGION 15131 CMP DATE 6.2

CALCIUM PLAGE DATA — SUNSPOT DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	1	31	15131	N27	E77	99	500	2.5										
78	2	1	15131	N28	E60	103	800	3.5	19945	N24	E56	106	(B)	3				
78	2	2	15131	N27	E44	105	600	3.0	19945	N25	E42	106	(B)	4	B	20	2	CSO
78	2	3	15131	N26	E31	105	400	2.0	19945	N25	E30	106	(B)	4	M	20	2	CAO
78	2	4	15131	N26	E19	105	400	2.0		N23	E15				B	0	1	AXX
78	2	5	15131	N26	E06	103	400	2.0										
78	2	6	15131	N27	W08	105	400	2.5										
78	2	7	15131	N27	W21	104	500	2.5										
78	2	8	15131	N27	W33	103	300	2.5										
78	2	9	15131	N27	W46	103	300	2.5										
78	2	10	15131	N27	W60	104	300	1.5										
78	2	11	15131	N27	W73	104	300	1.0										

MCMATH REGION 15132 CMP DATE 7.9 RETURN OF REGION 15104 ROTATION 2

CALCIUM PLAGE DATA — SUNSPOT DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	1	31	15132	S25	E85	91	600	2.0										
78	2	1	15132	S25	E79	84	1900	4.0	19946	S27	E77	85	(B)	4				
78	2	2	15132	S26	E65	84	1600	3.5	19946	S28	E65	83	(B)	4	B	200	10	ESO
78	2	3	15132	S27	E54	82	1600	3.5	19946	S27	E51	85	(B)	4	M	160	5	ESO
78	2	4	15132	S27	E41	83	1500	3.0		S27	E40				B	180	6	DSO
78	2	5	15132	S27	E27	82	1200	3.5		S27	E34				B	80	5	DSO
78	2	6	15132	S27	E16	81	1500	3.0		S27	E14				R	70	11	CSO
78	2	7	15132	S27	E03	80	1500	3.0		S28	E08				M	100	5	CSO
78	2	8	15132	S27	W10	80	1500	3.0	19946	S28	W15	84	(AP)	4	M	60	1	HSX
78	2	9	15132	S28	W23	80	1500	3.0										
78	2	10	15132	S29	W36	80	1600	3.0										
78	2	11	15132	S29	W49	80	1600	3.0										
78	2	12	15132	S29	W63	81	1500	3.0										
78	2	14	15132	S30	W88	79	800	1.5										

MCMATH REGION 15134 CMP DATE 8.3

CALCIUM PLAGE DATA — SUNSPOT DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	1	15134	N29	E90	73	300	1.0										
78	2	2	15134	N27	E72	77	500	3.5	19949	N26	E70	78	(AP)	2	B	30	2	BXO
78	2	3	15134	N28	E65	71	700	3.5	19949	N26	E60	76	(B)	3	M	50	2	BXO
78	2	4	15134	N28	E51	73	900	3.0		N26	E45				B	30	3	BXO
78	2	5	15134	N28	E36	73	1100	3.5		N25	E28				B	10	2	BXO
78	2	6	15134	N28	E22	75	1200	3.0		N28	E20				R	100	16	DRI
78	2	7	15134	N27	E09	74	1400	3.0		N27	E15				M	70	13	DAO
78	2	8	15134	N27	W04	74	1500	3.5	19949	N27	W08	77	(D)	4	M	180	15	ESO
78	2	9	15134	N27	W16	73	2100	3.5										
78	2	10	15134	N27	W30	74	2400	3.5										
78	2	11	15134	N27	W43	74	2400	3.5										
78	2	12	15134	N27	W55	73	2400	3.5										
78	2	13	15134							N25	W66				R	120	2	DSO
78	2	14	15134	N27	W83	74	1800	3.0		N25	W78				R	60	1	HSX
78	2	15	15134	N27	W90	69	500	1.0										

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15135 CMP DATE 8.4 RETURN OF REGION 15097 ROTATION 2

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	1	15135	N21 E90	73	400	2.0									
78	2	2	15135	N20 E77	72	1700	3.5	19950	N20 E68	80	(B)	3	B	130	4	CAO
78	2		15135					19951	N17 E76	72	(AP)	3	B	130	1	HSX
78	2	3	15135	N21 E63	73	2800	3.5	19950	N20 E56	80	(B)	4				
78	2		15135					19951	N18 E63	73	(BF)	4	M	130	1	HSX
78	2	4	15135	N20 E49	75	3500	3.5		N17 E48				B	210	6	CHO
78	2		15135						N20 E40				B	240	13	ESI
78	2	5	15135	N20 E35	74	3200	3.5		N18 E27				B	60	4	DSI
78	2		15135						N18 E34				B	120	4	DHO
78	2	6	15135	N20 E23	74	3500	3.0		N21 E12				R	70	9	CAO
78	2		15135						N20 E21				R	190	24	DAI
78	2	7	15135	N19 E10	73	3500	3.5		N20 E09				M	40	4	CSO
78	2		15135						N19 E15				M	110	15	DSO
78	2	8	15135	N19 W03	73	3100	3.5	19950	N22 W14	83	(AP)	3	M	130	11	DSO
78	2		15135					19951	N18 W04	73	(BF)	4				
78	2	9	15135	N19 W16	73	3100	3.5									
78	2	10	15135	N19 W30	74	3400	3.5									
78	2	11	15135	N19 W43	74	3400	3.5									
78	2	12	15135	N19 W55	73	3500	3.5									
78	2	13	15135						N17 W68				R	80	2	CSO
78	2	14	15135	N19 W83	74	1600	3.5		N16 W81				R	60	1	HSX

MCMATH REGION 15146 CMP DATE 10.8

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	10	15146	N40 E03	41	100	1.5									

MCMATH REGION 15140 CMP DATE 10.9

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	6	15140	S26 E57	40	100	1.0									

MCMATH REGION 15150 CMP DATE 11.7

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	11	15150	S28 E01	30	300	3.0									
78	2	12	15150	S27 W12	30	500	3.0									
78	2	13	15150						S28 W25				R	60	12	CRO
78	2	14	15150	S27 W39	30	1200	3.0		S28 W38				R	40	13	DRO
78	2	15	15150	S27 W52	31	1100	3.0	19954	S27 W52	30	(BF)	2	B	10	2	BXO
78	2	16	15150	S27 W65	30	1100	3.0		S30 W63				R	20	3	BXO
78	2	17	15150	S27 W77	30	700	2.5									
78	2	18	15150	S28 W90	29	400	1.0									

MCMATH REGION 15139 CMP DATE 11.9

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	5	15139	N17 E86	23	1200	4.0		N11 E76				B	120	1	HSX
78	2	6	15139	N17 E71	26	2800	4.0		N18 E67				R	310	13	EKO
78	2	7	15139	N17 E56	27	3700	3.5		N15 E61				M	770	6	EAO
78	2	8	15139	N17 E43	27	4200	4.0	19952	N16 E40	29	(D)	5	M	1010	18	EKI
78	2	9	15139	N17 E30	27	4700	4.0									
78	2	10	15139	N17 E16	28	4700	4.0									
78	2	11	15139	N17 E03	28	4700	4.0									
78	2	12	15139	N16 W13	31	4700	4.0									
78	2	13	15139						N14 W25				R	1750	62	FKC
78	2	14	15139	N16 W40	31	5100	4.0		N15 W37				R	1920	58	FKC
78	2	15	15139	N16 W53	32	5000	3.5	19952	N16 W51	29	(BY)	5	B	1920	24	FAI
78	2	16	15139	N17 W66	31	4600	3.5	19952	N17 W65	31	(BP)	4	R	970	48	FKI
78	2	17	15139	N17 W78	31	3600	3.5	19952	N19 W73	25	(AF)	2	B	200	3	HKX
78	2	18	15139	N17 W90	29	1200	1.5									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15141 CMP DATE 12.6

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	6	15141	S28 E80	17	100	1.0									
78	2	7	15141	S29 E67	16	100	1.5									
78	2	8	15141	S29 E53	17	100	1.5									

MCMATH REGION 15143 CMP DATE 12.9

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	7	15143	N06 E70	13	100	1.0									

MCMATH REGION 15147 CMP DATE 13.5

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	10	15147	N16 E38	6	200	1.5									

MCMATH REGION 15155 CMP DATE 14.6

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	16	15155	N27 W28	353	500	3.0	19957	N28 W29	355	(B)	2	R	50	8	DRO
78	2	17	15155	N27 W40	353	1000	3.5	19957	N28 W43	355	(B)	3	B	120	7	DAO
78	2	18	15155	N27 W53	352	1500	3.0	19957	N28 W55	354	(B)	3	B	190	7	DHI
78	2	19	15155	N27 W66	353	1800	3.5	19957	N28 W70	356	(BP)	3	B	200	4	CSO
78	2	20	15155	N28 W80	353	800	2.5	19957	N28 W80	353	(AF)	3				

MCMATH REGION 15142 CMP DATE 14.7 RETURN OF REGION 15100 ROTATION 2

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	7	15142	S24 E85	359	900	1.0									
78	2	8	15142	S25 E76	355	900	2.0	19953	S24 E78	352	(AP)	3	M	70	1	HSX
78	2	9	15142	S25 E65	353	2000	2.5									
78	2	10	15142	S25 E54	351	2400	3.0									
78	2	11	15142	S26 E42	350	2500	3.0									
78	2	12	15142	S26 E28	351	2400	3.0									
78	2		15142						S24 E16				R	60	1	HAX
78	2	14	15142	S27 E01	350	2400	3.0		S24 E02				R	30	4	HAX
78	2	15	15142	S27 W11	350	2300	2.5	19953	S25 W13	351	(AP)	3	B	10	2	AXX
78	2	16	15142	S27 W24	349	2000	2.5		S25 W19				R	20	4	BXO
78	2	17	15142	S27 W35	348	2300	2.5									
78	2	18	15142	S27 W48	347	1700	2.0									
78	2	19	15142	S27 W58	345	1500	2.0									
78	2	20	15142	S27 W70	343	800	1.5									
78	2	21	15142	S28 W83	343	600	1.0									

MCMATH REGION 15151 CMP DATE 15.6

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	12	15151	S04 E40	339	100	1.5									

MCMATH REGION 15157 CMP DATE 15.7

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	17	15157	N15 W25	338	100	1.0									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15148 CMP DATE 16.2

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	10	15148	S20 E77	328	500	2.0									
78	2	11	15148	S21 E63	329	500	2.0									
78	2	12	15148	S21 E50	329	400	1.5									
78	2	14	15148	S21 E20	331	500	1.5									
78	2	15	15148	S22 E08	331	300	1.0									
78	2	16	15148	S22 W06	331	200	1.0									
78	2	17	15148	S22 W19	332	100	1.0									
78	2	18	15148	S24 W32	331	300	2.5		S27 W33				B	10	2	BXO
78	2	19	15148	S24 W46	333	500	2.5									
78	2	20	15148	S24 W59	332	300	2.0									
78	2	21	15148	S24 W72	332	200	1.0									

MCMATH REGION 15158 CMP DATE 17.5

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	17	15158	N29 W01	314	100	1.5									
78	2	18	15158	N28 W13	312	100	1.0									
78	2	19	15158	N28 W26	313	200	2.0									
78	2	20	15158	N28 W39	312	200	1.0									
78	2	21	15158	N28 W52	312	200	1.0									

MCMATH REGION 15152 CMP DATE 18.6

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	12	15152	N22 E85	294	500	1.5									
78	2	13	15152						N31 E78				R	80	1	HSX
78	2	14	15152	N22 E50	301	500	2.5									
78	2	15	15152	N21 E38	301	300	1.0									
78	2	16	15152	N22 E25	300	200	1.0									

MCMATH REGION 15159 CMP DATE 18.8

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	17	15159	N18 E15	298	100	2.5									
78	2	18	15159	N18 E02	297	100	2.0									
78	2	19	15159	N18 W11	298	100	1.0									

MCMATH REGION 15171 CMP DATE 19.5

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	24	15171	N14 W68	287	100	1.0									

MCMATH REGION 15153 CMP DATE 20.8

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	14	15153	N30 E70	281	2100	3.5		N31 E66				R	250	6	DKO
78	2	15	15153	N30 E58	281	3400	4.0	19955	N30 E55	283	(BP)	4	B	240	12	CAI
78	2	16	15153	N30 E44	281	3200	3.5	19955	N31 E43	283	(BP)	4	R	270	11	DKO
78	2	17	15153	N30 E32	281	2800	3.5	19955	N31 E30	282	(BP)	4	B	240	11	CSO
78	2	18	15153	N31 E19	280	2700	3.5	19955	N29 E14	285	(AP)	5	B	190	5	CHO
78	2	19	15153	N31 E06	281	2500	3.5	19955	N30 E03	283	(BP)	4	B	180	4	CHI
78	2	20	15153	N31 W07	280	2500	3.0	19955	N30 W11	284	(BP)	5	B	1220	6	DHO
78	2	21	15153	N32 W19	279	2700	3.5	19955	N30 W24	283	(BP)	5	B	220	4	CSO
78	2	22	15153	N32 W33	279	2400	3.0	19955	N30 W38	283	(AP)	5	B	220	4	HSI
78	2	23	15153	N32 W45	278	2400	3.0	19955	N29 W50	282	(AP)	4	B	120	3	HSX
78	2	24	15153	N32 W58	277	2400	2.5	19955	N30 W64	283	(AP)	5	B	160	1	HSX
78	2	25	15153	N33 W71	278	2000	2.5	19955	N30 W77	284	(AP)	3	M	260	1	HSX

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15164 CMP DATE 21.0

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	21	15164	S01 W08	268	100	1.5									

MCMATH REGION 15154 CMP DATE 21.6 RETURN OF PART OF REGION 15112 ROTATION 5

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	15	15154	N19 E84	255	2500	2.0	19956	N20 E80	258	AP	3	B	130	6	CSI
78	2	16	15154	N20 E70	255	2500	3.0	19956	N19 E66	260	(AP)	3	R	120	7	DAI
78	2	17	15154	N20 E54	259	2500	2.5	19956	N20 E53	259	(AP)	3	B	80	6	DAO
78	2	18	15154	N20 E41	258	2500	3.0	19956	N20 E40	259	(AP)	3	B	50	4	CRO
78	2	19	15154	N20 E26	261	2200	3.0	19956	N19 E26	260	(AP)	2	B	40	4	CRI
78	2	20	15154	N20 E13	260	2300	2.5	19956	N19 E14	259	(BP)	3	B	4050	6	CSO
78	2	21	15154	N20 E00	260	2500	3.0	19956	N20 E01	258	(BP)	3	B	50	12	CSI
78	2	22	15154	N20 W13	259	2600	3.0	19956	N20 W11	256	(BP)	4	B	60	17	CSO
78	2	23	15154	N20 W25	258	2500	3.0	19956	N21 W23	255	(B)	4	B	60	13	DAO
78	2	24	15154	N20 W40	259	2600	3.0	19956	N21 W38	257	(BP)	4	B	30	4	DSO
78	2	25	15154	N20 W53	260	2300	3.0	19956	N20 W52	259	(AP)	3				
78	2	26	15154	N20 W65	260	2300	3.0									
78	2	27	15154	N21 W78	258	1000	2.0									

MCMATH REGION 15160 CMP DATE 22.5 RETURN OF PART OF REGION 15112 ROTATION 5

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	16	15160	N20 E80	245	1200	3.0									
78	2	17	15160	N20 E65	248	1800	3.5	19958	N20 E63	249	AF	2				
78	2	18	15160	N20 E52	247	2000	3.5									
78	2	19	15160	N20 E37	250	2000	3.5									
78	2	20	15160	N20 E24	249	2000	3.0									
78	2	21	15160	N20 E11	249	1800	3.0									
78	2	22	15160	N20 W02	248	1600	3.0									
78	2	23	15160	N20 W15	248	1700	3.0									
78	2	24	15160	N20 W29	248	1700	2.5									
78	2	25	15160	N21 W42	249	1300	2.5		N20 W43				M	40	5	CRO
78	2	26	15160	N20 W54	249	1200	2.0		N20 W55				M	10	1	AXX
78	2	27	15160	N20 W65	245	800	1.5									
78	2	28	15160	N22 W80	246	800	1.5									

MCMATH REGION 15156 CMP DATE 23.1

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	16	15156	S24 E85	240	700	2.0									
78	2	17	15156	S24 E73	240	400	1.5									
78	2	18	15156	S25 E60	239	600	2.5		S24 E60				B	20	1	AXX
78	2	19	15156	S25 E46	241	500	2.5									
78	2	20	15156	S25 E33	240	500	2.0									
78	2	21	15156	S25 E19	241	300	2.0									
78	2	22	15156	S25 E06	240	300	2.0									
78	2	23	15156	S25 W06	239	200	2.0									
78	2	24	15156	S25 W19	238	200	1.0									
78	2	25	15156	S25 W32	239	200	1.0									

MCMATH REGION 15161 CMP DATE 24.6 RETURN OF REMNANTS OF REGION 15123 ROTATION 3

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	18	15161	N23 E78	221	2800	3.5	19959	N21 E76	223	(AP)	2	B	60	3	CRO
78	2	19	15161	N23 E64	223	2400	3.5	19959	N22 E64	222	(B)	2	B	120	7	ESI
78	2	20	15161	N23 E51	222	2800	3.0	19959	N23 E50	223	(B)	4	B	80	7	DSI
78	2	21	15161	N23 E38	222	3000	3.0	19959	N21 E37	222	(BF)	4	B	120	15	ESI
78	2		15161					19962	N19 E31	228	(AP)	4				
78	2	22	15161	N23 E25	221	3400	3.5	19959	N22 E23	222	(BF)	4				
78	2		15161					19962	N19 E17	228	(AP)	4	B	170	26	ESI
78	2	23	15161	N23 E13	220	3400	3.5	19959	N22 E09	223	(B)	4	B	120	21	EAI
78	2		15161					19962	N19 E03	229	(BP)	4				
78	2	24	15161	N23 W01	220	3600	3.5	19959	N22 W05	224	(B)	4	B	130	23	FSI
78	2		15161					19962	N18 W11	230	(AP)	4				
78	2	25	15161	N23 W14	221	3600	3.5	19959	N23 W15	222	(BF)	4	M	170	36	FSI
78	2		15161					19962	N19 W23	230	(B)	4				

(con't)

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15161 (CONT) CMP DATE 24.6 RETURN OF REGION 15113 ROTATION 3

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	26	15161	N23 W26	221	4000	3.5		N21 W34				M	190	20	FAI
78	2	27	15161	N23 W37	217	3800	3.0									
78	2	28	15161	N23 W52	218	3800	3.0		N20 W55				R	320	30	FAO
78	3	01	15161	N23 W65		3800	3.0		N19 W79				B	100	8	D
78	3	01	15161						N23 W67				B	20	4	H
78	3	02	15161	N24 W78		2600	2.5		N21 W89				B	160	4	D
78	3	03	15161	N25 W90		500	1.0									

MCMATH REGION 15162 CMP DATE 26.8 RETURN OF REGION 15119 ROTATION 2

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	20	15162	N38 E85	188	600	3.0	19960	N39 E80	193	(AP)	2				
78	2	21	15162	N37 E65	195	1800	3.5	19960	N38 E65	194	(AP)	4	B	80	2	DAC
78	2	22	15162	N38 E53	193	1800	3.0	19960	N39 E52	193	(AP)	4	B	60	3	HAX
78	2	23	15162	N38 E40	193	2000	3.0	19960	N40 E39	193	(AP)	4	B	30	2	HAX
78	2	24	15162	N38 E27	192	1900	3.0	19960	N39 E26	193	(AP)	4	B	30	3	CAO
78	2	25	15162	N39 E15	192	1800	3.0	19960	N40 E14	193	(AP)	3	M	50	3	HAX
78	2	26	15162	N39 E03	192	2000	3.0		N39 W03				M	60	6	DRO
78	2	27	15162	N38 W10	190	2000	3.0									
78	2	28	15162	N38 W24	190	2600	3.5		N38 W22				R	150	26	CAI
78	3	01	15162	N38 W36		3400	3.5		N38 W40				B	210	31	D
78	3	02	15162	N38 W47		3400	3.5		N38 W53				B	240	41	D
78	3	03	15162	N38 W60		3400	3.5		N38 W63				B	400	26	E
78	3	04	15162	N39 W73		2800	3.5		N36 W78				B	310	7	E
78	3	05	15162	N39 W85		1000	1.0									

MCMATH REGION 15163 CMP DATE 27.5

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	20	15163	S18 E86	187	500	2.0	19961	S21 E85	188	(AP)	3	B	2060	1	HSX
78	2	21	15163	S19 E73	187	2000	3.5	19961	S22 E72	187	(AP)	5	B	160	1	HSX
78	2	22	15163	S19 E63	183	1800	3.5	19961	S21 E58	187	(BP)	5	B	200	2	CSO
78	2	23	15163	S19 E51	182	2000	3.5	19961	S20 E47	185	(BP)	5	B	140	3	CSO
78	2	24	15163	S19 E37	182	1600	3.0	19961	S20 E34	185	(BP)	5	B	120	3	DSO
78	2	25	15163	S19 E24	183	1400	3.0	19961	S20 E22	185	(BP)	5	M	170	12	CSO
78	2	26	15163	S19 E12	183	1700	3.0		S20 E06				M	150	8	CSO
78	2	27	15163	S19 W02	182	1500	2.5									
78	2	28	15163	S19 W16	182	1700	3.0		S20 W16				R	160	7	CSO
78	3	01	15163	S19 W29		1600	3.0		S20 W35				B	160	6	B
78	3	02	15163	S19 W41		1600	3.0		S19 W47				B	180	11	C
78	3	03	15163	S19 W56		1500	3.0		S16 W63				B	150	9	D
78	3	04	15163	S17 W70		1900	2.5		S17 W76				B	200	4	D
78	3	05	15163	S17 W83		1200	2.5		S20 W85				B	140	1	H

MCMATH REGION 15165 CMP DATE 27.9

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	21	15165	N17 E85	175	1200	1.5									
78	2	22	15165	N18 E69	177	1100	2.0	19963	N18 E64	181	(AP)	3				
78	2	23	15165	N17 E56	177	1300	2.5									
78	2	24	15165	N17 E43	176	1200	2.0									
78	2	25	15165	N17 E30	177	900	2.0									
78	2	26	15165	N17 E17	178	900	2.0									
78	2	27	15165	N17 E04	176	700	2.0									
78	2	28	15165	N17 W12	178	500	2.0									
78	3	01	15165	N17 W35		400	1.5									
78	3	02	15165	N17 W37		400	1.5									
78	3	03	15165	N17 W52		300	1.0									
78	3	04	15165	N18 W65		300	1.0									

MCMATH REGION 15169 CMP DATE 28.6 RETURN OF REGION 15123 ROTATION 3

CALCIUM PLAGE DATA / SUNSPOT DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	22	15169	S18 E82	164	800	2.0	19964	S23 E83	162	(AP)	4				
78	2	23	15169	S18 E70	163	800	2.5	19964	S23 E70	162	(AP)	4	B	50	1	HSX
78	2	24	15169	S17 E54	165	900	2.0	19964	S23 E57	162	(AP)	4	B	80	1	HSX
78	2	25	15169	S18 E39	168	800	2.0	19964	S23 E45	162	(AP)	3				

(con't)

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1978

MCMATH REGION 15169 (CONT) CMP DATE 28.6 RETURN OF REGION 15123 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	26	15169	S18 E27	168	800	2.0		S23 E29				M	70	4	CSO
78	2	27	15169	S18 E13	167	500	2.0									
78	2	28	15169	S18 W01	167	500	2.0									
78	3	01	15169	S18 W13		400	2.0		S22 W11				B	40	4	C
78	3	02	15169	S17 W26		400	2.0		S22 W23				B	20	12	B
78	3	03	15169	S17 W41		400	1.5		S17 W38				B	10	4	A
78	3	04	15169	S17 W54		300	1.5		S18 W48				B	10	3	B
78	3	05	15169	S17 W67		400	1.5		S18 W63				B	20	4	B
78	3	06	15169	S17 W81		300	1.0									

MCMATH REGION 15167 CMP DATE 28.7

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	2	23	15167	N18 E70	163	300	2.0									
78	2	24	15167	N18 E56	163	300	2.0									
78	2	25	15167	N18 E43	164	300	1.5									
78	2	26	15167	N18 E29	166	300	2.0		N16 E34				M	10	3	BXO
78	2	27	15167	N18 E15	165	300	1.5									
78	2	28	15167	N17 E00	166	100	1.5									
78	3	01	15167	N17 W13		200	2.0									
78	3	02	15167	N16 W26		200	2.0									
78	3	03	15167	N16 W40		200	1.0									
78	3	04	15167	N16 W53		200	1.0									

DAILY CALCIUM PLAGE INDEX

FEBRUARY 1978

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
78	2	1	37.8	78	2	11	40.3	78	2	21	30.7
78	2	2	42.5	78	2	12	37.3	78	2	22	33.1
78	2	3	43.4	78	2	13	*	78	2	23	37.8
78	2	4	44.5	78	2	14	27.9	78	2	24	37.8
78	2	5	40.3	78	2	15	23.4	78	2	25	36.6
78	2	6	37.6	78	2	16	22.2	78	2	26	37.5
78	2	7	38.2	78	2	17	22.4	78	2	27	30.2
78	2	8	36.0	78	2	18	24.3	78	2	28	31.5
78	2	9	38.0	78	2	19	26.8				
78	2	10	41.1	78	2	20	23.3				

* NO OBSERVATIONS

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on February 13, 1978.
No sunspot observations were made at Mt. Wilson on February 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 26, 27 and 28, 1978.

SUDDEN IONOSPHERIC DISTURBANCES

FEBRUARY 1978

DAY	UNIVERSAL TIME				WIDE	NUMBER OF STATION REPORTS BY TYPE							KNOWN	McMATH
	START	END	MAX	IMP	SPREAD INDEX	SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	FLARE	REGION
01	0146	0240	0154	1-	1				1				0141	15126
01	2351	0103	0005	1-	1				1				2359	15126
02	0126	0157	0136	1-	1				1				0128	X-RAY
02	0425	0614	0453	1-	1				1				0421	X-RAY
02	0844	0910	0849	1-	1						1		0842	15126
02	1135	1300	1143	2	5	2		3	4		3		1133	15126
02	2331	0006	2340	1-	1				1				2336E	15126
03	0055	0132	0107	1-	1				1				0053	X-RAY
03	0217	0404	0320	1+	1				1				0216E	15135
03	0257	0307	0300	1-	1	1							0256	15124
03	0444	0657	0452	1	3	1			1				0441	X-RAY
03	0807	0840	0815	2	5				2		1		0805	15124
03	1030	1045	1035	1-	3				1		1		1021	15135
03	1512	1603	1522	1	5						8		1522	15126
03	1608	1715	1615	2	5	2			2	1	11		1605	15135
03	2018	2042	2020	1	5	1			1	1	6		2015E	15136
04	0900	0912	0903	1+	3				1		1		0859	15124
05	0126	0205	0133	1-	1				1				0116	15135
05	0249	0341	0251	1-	1				1				0245	X-RAY
05	0656	0734	0713	1-	1				1				0657	X-RAY
06	0418	0509	0433	1-	1				1				*	
06	0657	0723	0706	1-	1				1				*	
07	1713	1810	1723	1-	5	1			1	1	8		1707	15134
07	2107	2152	2114	1-	5	1			2	1	8		2109	X-RAY
08	0012	0100	0030	1-	1				1				0019	X-RAY
08	0153	0208	0157	1-	1				1				0156	15139
08	0310	0350D	0340	1-	1				1				0312	15139
08	0352	0547	0401	1+	3	1			1				0355E	15139
08	0446E	0517	0454	1-	3	1			1				0449E	15139
08	0547	0711D	0600	1-	1				1				0545	X-RAY
08	0711E	0837	0719	1+	1				1				0712	15134
08	1114	1215	1134	1-	5			1	4		2		1111	15134
08	1421	1530	1435	1-	1				1		1		1418	15139
08	1633	1739	1639	1-	3					1	3		1629	15134
08	1958	2058	2008	1-	5				1	1	9		1958	15139
09	0026	0057	0036	1-	1				1				0025	X-RAY
09	0336	0439D	0346	1-	1				1				0338	X-RAY
09	0439E	0720	0545	1-	1				1				0449	15139
09	0806	0832	0810	1-	1				1				0804	X-RAY
09	0917	0930	0920	1-	3			1	1		1		0917	15139
09	0940	1037	0955	1-	5				4		1		0947	15139
09	1111	1123D	1123	2	5	1		4	4		3		1111	15134
09	1155	1300	1200	1	5			4	3		3		1115	15139
09	1359	1410D	1410	1	5			3	3		2		1400E	15139
09	1444	1457D	1457	1+	5	1		3	4		7		1436	15139
09	1520	1600	1527	1+	5			4	4		10		1511	15135
09	1602	1630	1606	2	5	2	1	6	4	1	11		1559	X-RAY
09	1828	1908	1839	1-	5	1		1	4	1	10		1823	15135
09	2104	2139	2112	1-	5	1			2	1	6		2102	X-RAY
09	2154	2249D	2210	1	3				2				2156	X-RAY
09	2249	0005	2300	2-	5	1		1	2		3		2256E	15139
10	0014	0149	0030	2	5	1		1	1		1		0019	15139
10	0148	0326D	0223	1+	5	1		1	1		1		NF	
10	0658	0820	0704	1-	1				1				0659	15139
10	1202	1217	1206	1-	1				1				1158	X-RAY
10	1713	1830	1735	1	5	2		1	2	1	11		1716E	15139
10	2103	2243	2116	1+	5	3			2	1	7		2100	X-RAY
11	0100	0150	0116	1-	1				1				0110	15134
11	0156	0237	0210	1-	1				1				0203	15139
11	0321	0400	0326	1-	1				1				0320	15139
11	0507	0551	0522	1-	1				1				0507	X-RAY
11	0749	0914	0823	1-	3				1		1		0753	15139
11	0816	0838	0823	1	3			1	1		1		0815	15139
11	1425	1530	1431	1+	5	1		5	3		7		1425	15139
11	1702	1750	1708	1-	5	1			1	1	7		1701	15139
11	1829	1929	1840	1-	5				1	1	7		1831	X-RAY
11	1940	2052	2003	1	5	1			1	1	7		1940	15139
11	2342	0245	0018	2	3	1			1		1		2350E	15139
12	0316	0401	0320	1-	1				1				0312	X-RAY
12	0905	0920	0908	1-	1						1		*	
12	0942	1000	0946	1-	5				3		1		0939	X-RAY
12	1059	1247	1111	1	5	1		3	4		3		1103	15139
12	1131	1215	1145	1-	5			1	3		1		NF	
12	1309	1400	1319	1-	5			2	3		2		1302	15139
12	1604	1700	1614	1-	5				1		4		1603	15139
12	1848	2000	1907	1	5	3			1		9		1846	15139
12	2240	2318	2252	1-	1				1				*	

SUDDEN IONOSPHERIC DISTURBANCES

FEBRUARY 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
13	0130	0530	0300	3	3	1			1				0129	15139
13	0232	0324	0256	1-	1				1				0251	15139
13	0408	0435	0414	1-	1				1				0408	15139
13	0544	0632	0604	1-	1				1				0551	15139
13	0820	0911	0827	1-	5			1	2		1		0818E	15139
13	1038	1100	1041	1	3			1	1		1		1036	15139
13	1730	1800	1734	1-	5	1					8		1727	X-RAY
13	1900	2015	1913	1+	5	2			1		12		1858	X-RAY
13	2141	2155	2143	1-	5	1			2		5		2136	X-RAY
13	2154	2238	2209	1-	1				1				*	
13	2324	0126	2332	1-	1				1				2325E	15139
14	0620	0644	0624	1-	1				1				0618	X-RAY
14	0702	0707D	0707	1-	3				1		1		0657	X-RAY
14	0802E	0840	0805	1-	1				1				0804	X-RAY
14	1109	1145	1116	1-	3				2		1		1110	15139
14	1218	1240	1222	1-	1						1		1225	15139
14	1622	1636	1625	1-	3						2		1620	15139
14	1721	1810	1727	1-	5				1	1	4		1720	15139
14	2316	2354	2324	1	5				1		3		2312	X-RAY
15	0105	0200	0111	1-	1				1				0100	X-RAY
15	0303	0400D	0331	1-	1				1				0254	X-RAY
15	0358E	0712D	0448	1-	3	1			1				0405E	15139
15	0441E	0514	0447	1-	3	1			1				0439	X-RAY
15	0712E	0904D	0756	1+	1				1				0715	X-RAY
15	0721	0727D	0727	1	1						1		0720E	15139
15	0747	0825	0752	1-	3	1		2	2		2		0746	15139
15	0905	0914	0909	1	3				2				0906	15139
15	1010	1026	1014	1	5				2		1		1005	15139
15	1113	1144	1115	1	1			1	1				1110	15139
15	1330	1337D	1337	1-	1			1	1				1334	15139
15	1345	1430	1349	1-	5	1		5	2		5		1345	15139
15	1842	1854	1844	1-	5	1			1	1	4		1838	15153
15	1859	1940	1904	1-	5						3		1858	15139
15	2015	2115	2021	1-	3						2		2011	X-RAY
15	2153	2230	2200	1-	5				3	1	3		2151	X-RAY
15	2229	2319	2242	1-	5	1			2	1	2		2217E	15139
15	2332	0017D	2337	1-	5				2		1		2330E	15139
16	0017E	0042	0022	1-	1				1				0014	X-RAY
16	0135	0248	0145	1-	1				1				0139	X-RAY
16	0437	0456	0442	1-	1				1				0435	X-RAY
16	0609	0822	0618	1	3	1			1				0610	15139
16	0930	0943	0932	1	3				1		1		0924	X-RAY
16	1212	1225	1215	1-	1				1		1		*	
16	1231	1253	1236	1	3			1	1		1		1228	X-RAY
16	1331	1340	1334	1-	1				1				1329	15153
16	1819	1824D	1824	1-	1	1							1822	15155
16	1836	1915	1839	1-	1	1							1836	15155
16	2115	2140	2121	1-	5				2	1	5		NF	
17	0132	0306D	0147	2-	5	1			1		1		0141	15139
17	0306E	0422	0320	1+	5	1		1	1		1		0303	X-RAY
17	0525E	0646	0537	1-	1				1				0525E	15139
17	1248	1300	1252	1	3			1	1		1		1246	X-RAY
17	1800	1824	1810	1-	5						6		1758	15155
17	2210	2239	2223	1-	1				1				2215E	15155
18	0046	0130	0052	1-	1				1				0040	15155
18	0210	0307	0213	1-	5	1			1		1		0211	15155
18	1806	1835	1819	1	3						3		NF	
18	2201	2307	2211	1	5	1			2	1	8		2158	X-RAY
19	2333	0030	2351	1-	1				1				*	
19	2357	0026	0001	1-	1				1				*	
20	1609	1645	1614	1-	3						3		1609	15162
21	0406	0508	0410	1-	1				1				*	
21	0454	0546	0531	1-	1				1				*	
21	0843	0910	0850	1-	1				1				0842	X-RAY
21	1135	1300	1148	1-	1						1		1133	X-RAY
21	1516	1615	1525	1	5	1		1	1		8		1518	15161
21	2224	2315	2232	1-	5				1		2		2220	X-RAY
21	2254E	2355	2303	1-	5				1		2		2252	15162
22	1834	1911	1842	1-	5					1	6		1826	15154
23	0226	0314D	0233	1-	1				1				0225	15160
23	0314E	0356	0320	1-	1				1				0311	X-RAY
24	0241	0337	0246	1-	3	1			1				0241	15161
24	0735	0800	0738	1-	1						1		0739E	15161
25	0808	0911	0817	1+	5			2	3		2		0805	X-RAY
25	1448	1700	1456	2	5	4	1	6	4	1	14		1449	15161

SUDDEN IONOSPHERIC DISTURBANCES

FEBRUARY 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TIME SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
26	0114	0146	0118	1-	1				1				0104	15161
26	0229	0316	0233	1-	3	1			1				0231E	15161
26	0618	0810	0626	1	1				1				0616	X-RAY
26	0750	0820	0752	1-	1						1		*	
26	1413	1515	1415	1-	5			3	4	1	6		1412	15161
26	2322	0037	0007	1-	1				1				2331E	15161
27	1225	1255	1230	1-	3			1	1		1		NF	
28	0735	0800	0740	1-	5			1	2		1		0740E	15161
28	2005	2045	2014	1	1	1							NF	

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-16	0000-2400 A37
01-03	0000-2400 A40
01	0000-2400 A34
07	0000-2400 TN, 1007-1356 UM (16 kHz)
08	0000-2400 A40
09-12	0000-2400 A28
11	0620-0749 UM (13 kHz), 1715-1912 UM (13 kHz), 2018-2045 UM (13 kHz)
12	1606-2100 TM
17	0235-0525 UM (13 kHz), 2100-2130 UM (13 kHz) 2050-2120 UM(13 kHz)
21	0000-2400 A40, 1114-1343 UM (16 kHz)
23	0000-2400 TN, 2058-2124 TM
28	1030-1345 UM (16 kHz)

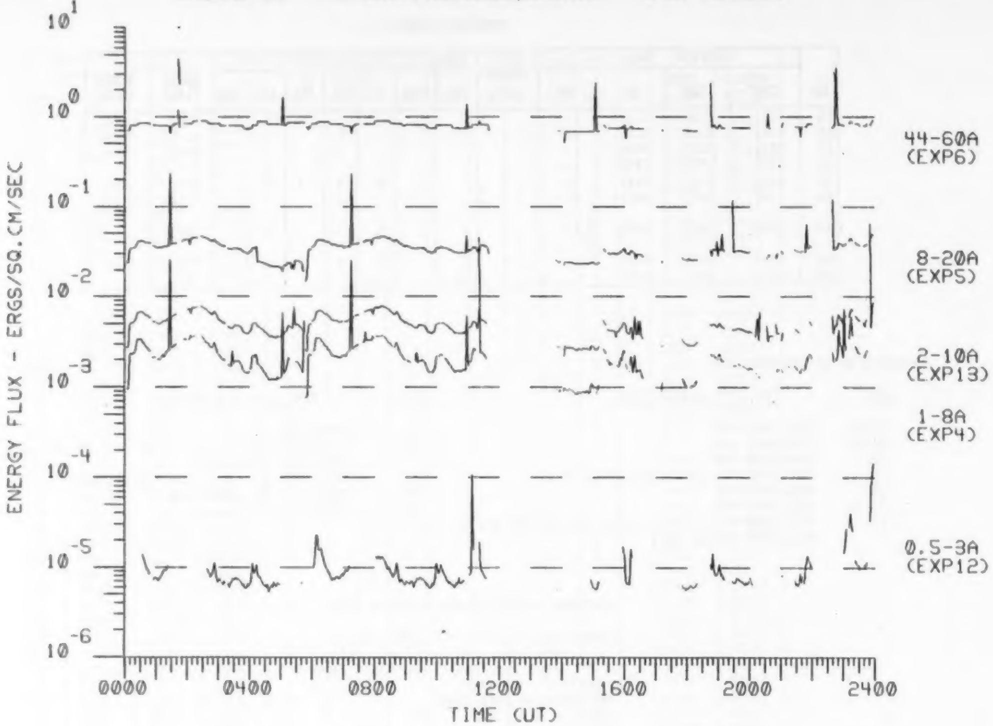
STATIONS REPORTING FOR FEBRUARY 1978

AAVSO (A1, A5, A19, A21, A28, A30,
A31, A34, A35, A37, A40, A45)
(SES) (A1, A31) (SEA) (A31) (SWF)
DARMSTADT (DA) (SWF)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
KUHLUNGSBORN (KU) (SEA, SPA)
MC MATH (MC) (SWF, SCNA)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (SPA, LF-SPA)
TORINO (TN) (SPA)
NOTE; A5 is now reporting from Mahwah, New Jersey
A45 is a new observer reporting from Tarentum, Pennsylvania

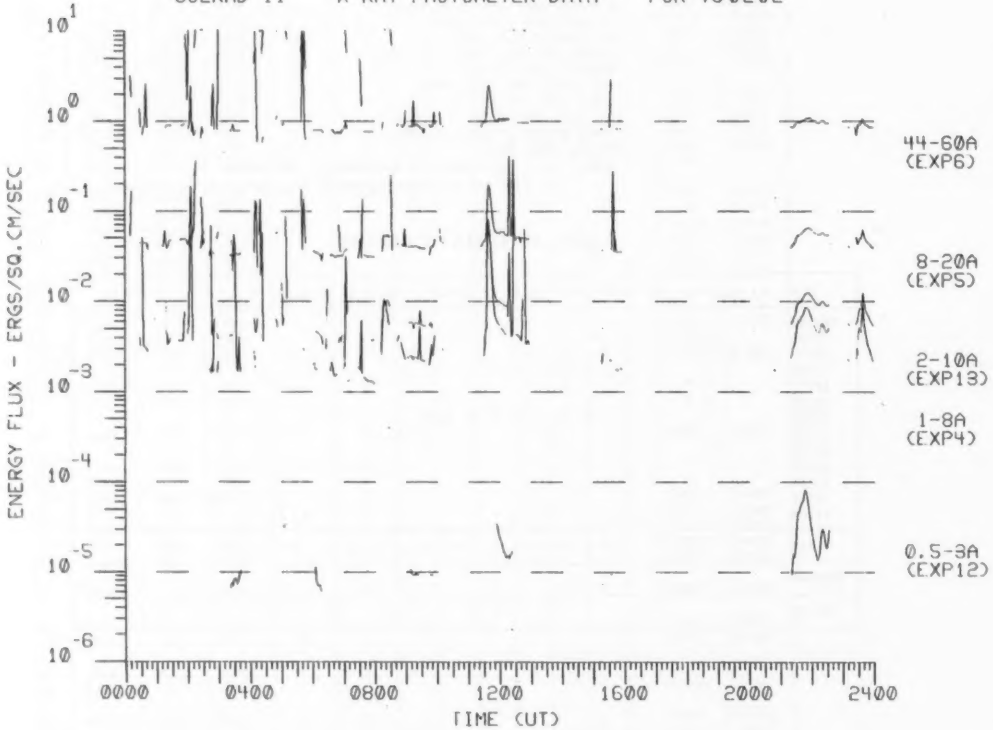
SID's BY McMATH REGION

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
REGION																												
15124			2	1																								
15126	2	3	1																									
15134							1	3	1		1																	
15135			3		1				2																			
15136			1																									
15139								6	7	3	8	4	7	4	11	1	2											
15153															1	1												
15154																						1						
15155																	2	2	2									
15160																							1					
15161																					1			2	1	4		1
15162																				1	1							
X-RAY		2	2		2		1	2	6	2	2	2	3	4	6	5	2	1			3		1		1	1		
UNKNOWN												1				1	1										1	1
NO FP						2				1		2	1			1			2		2					1		

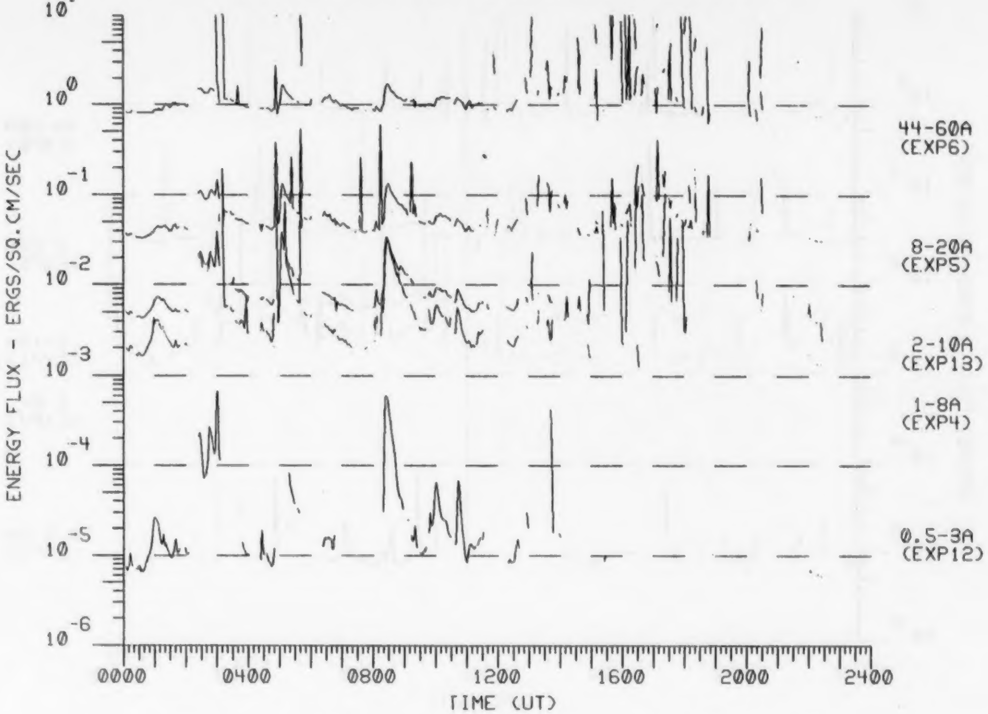
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780201



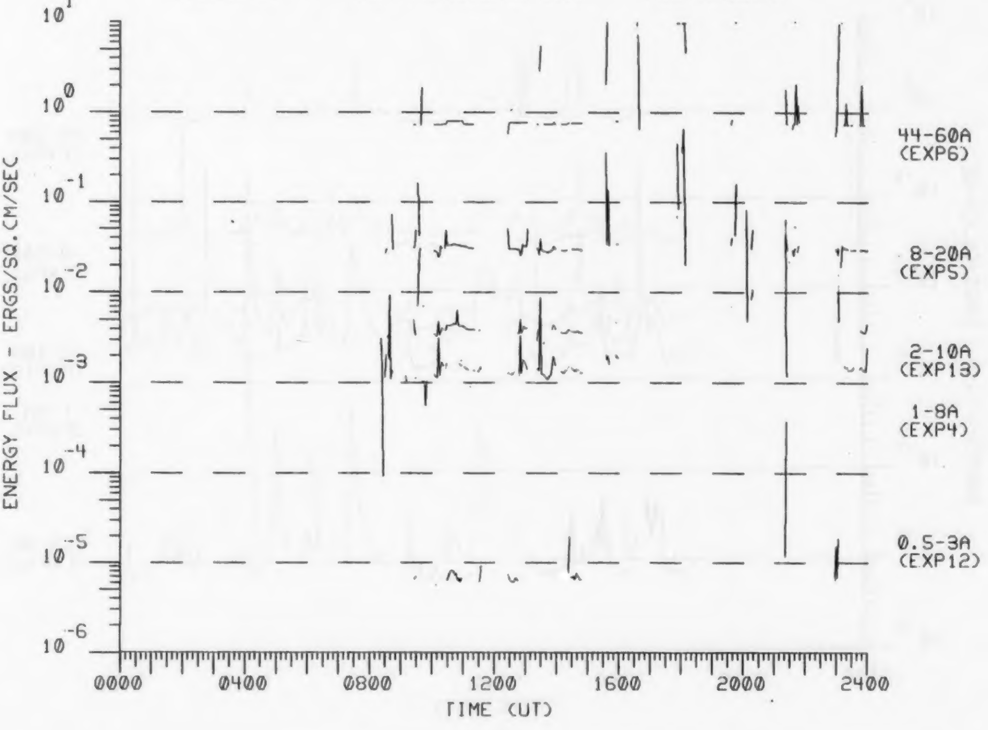
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780202

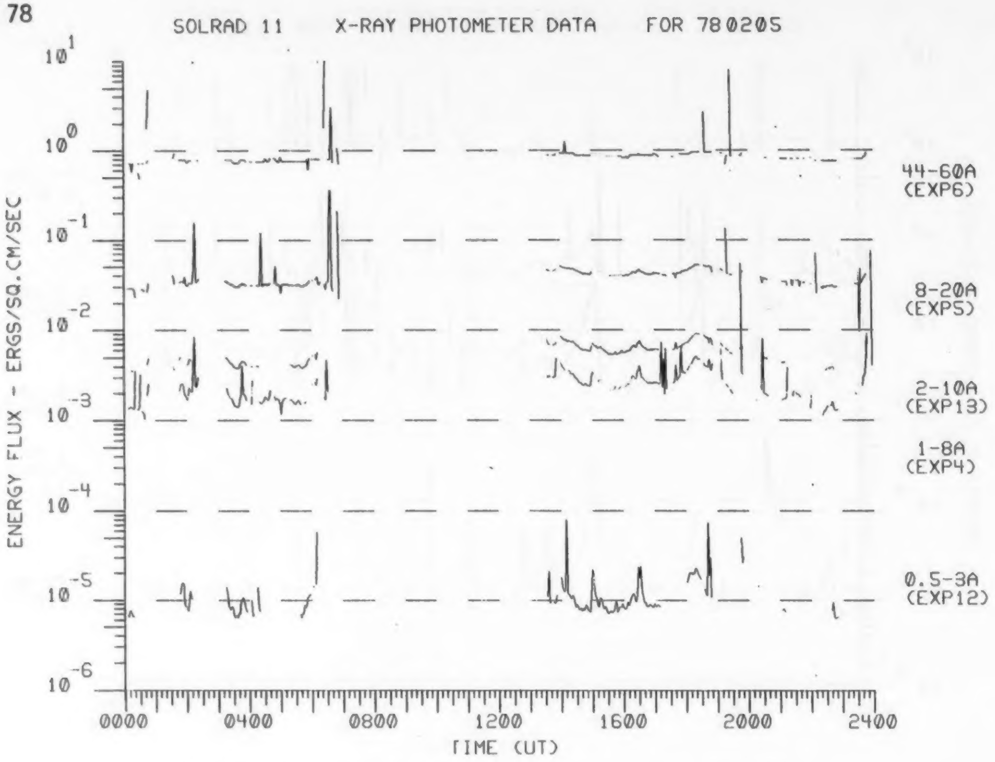


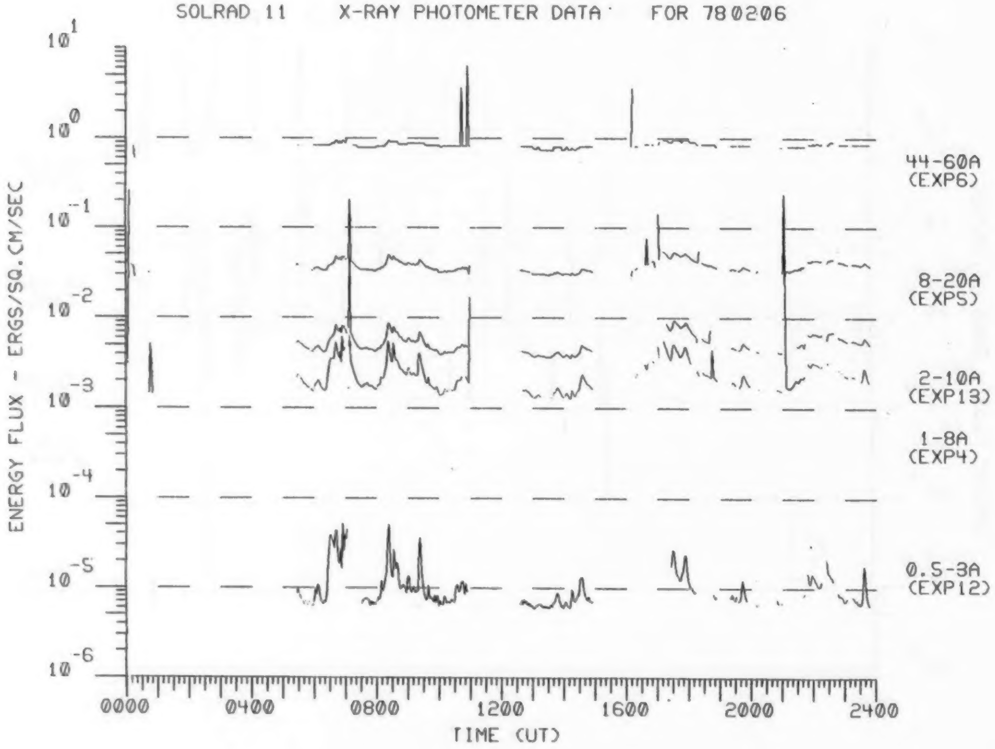
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780203

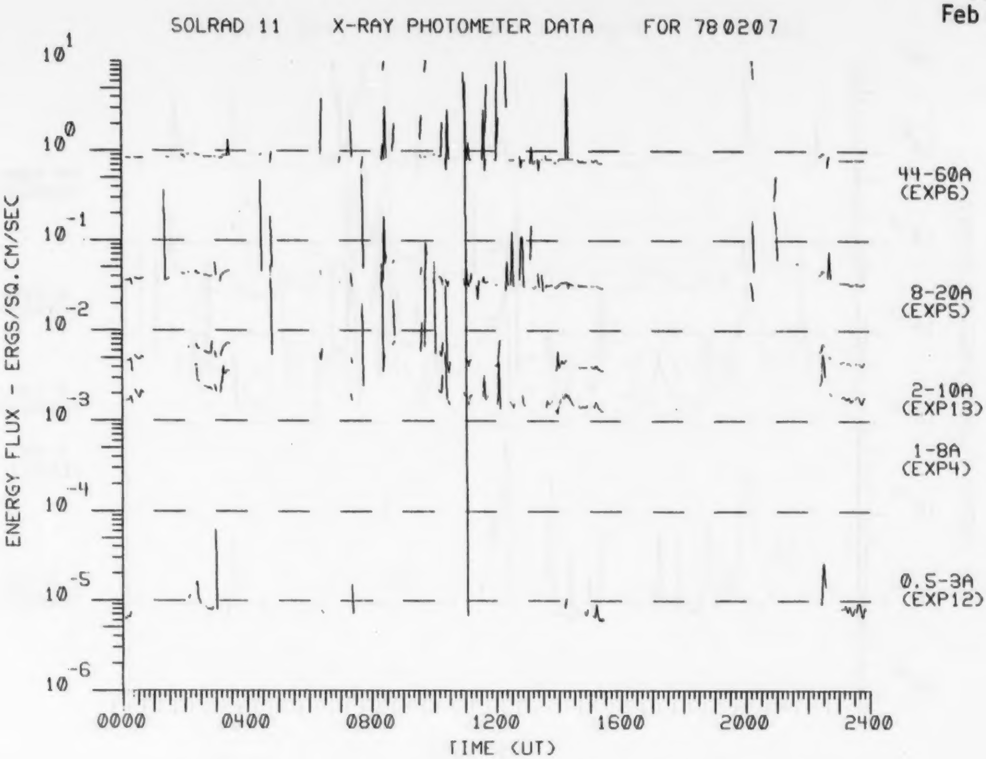


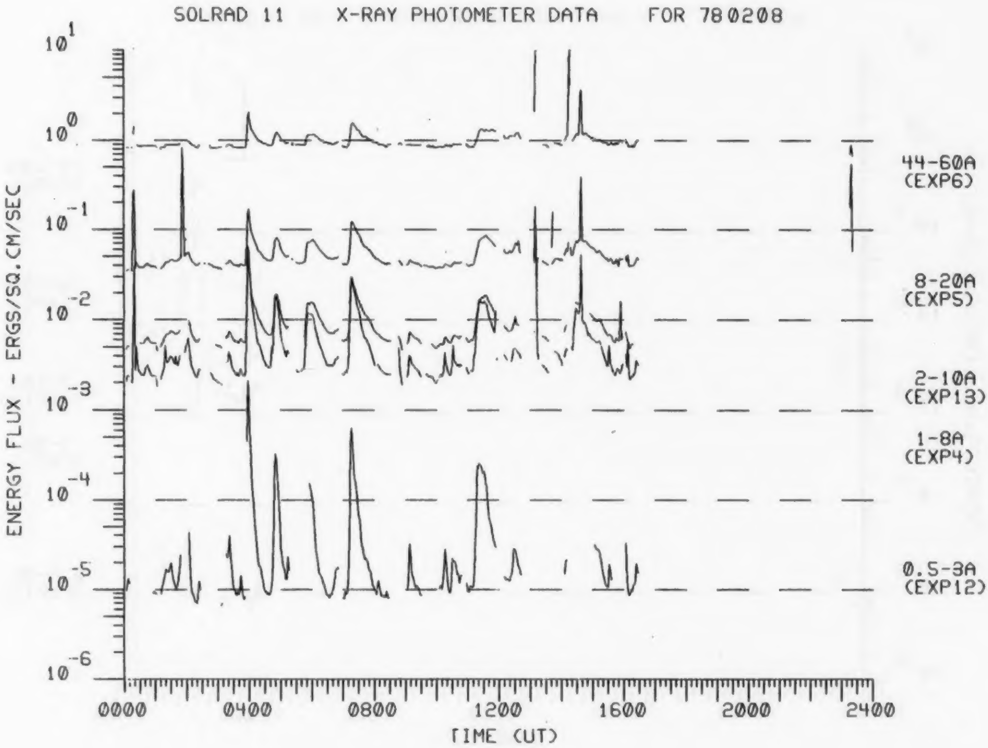
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780204



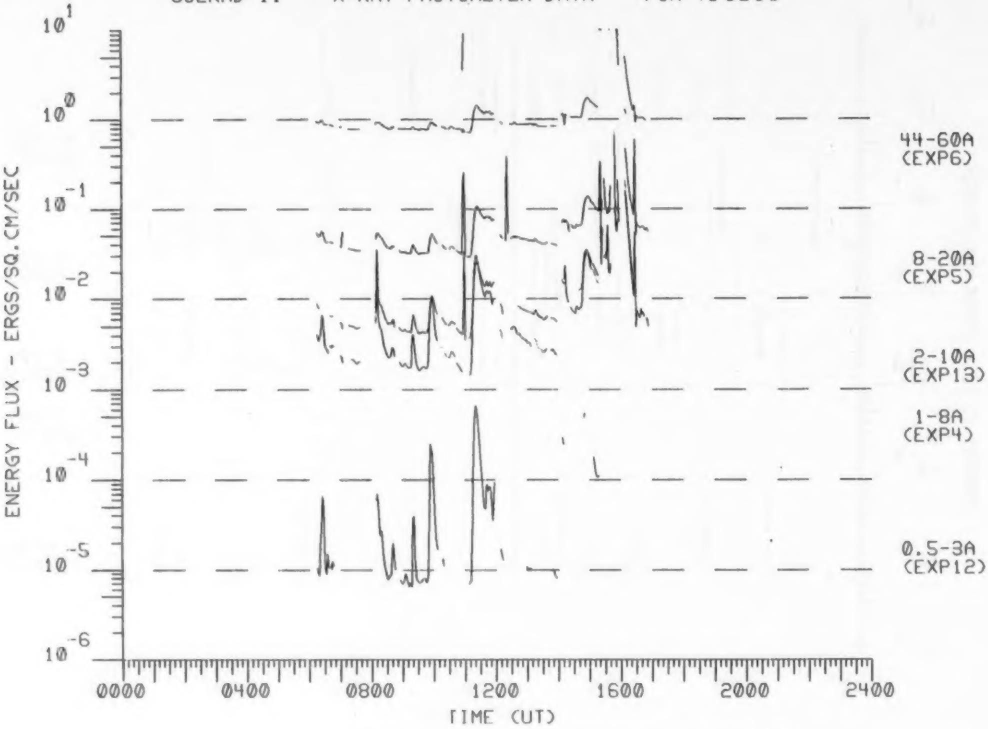

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780205
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780206
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

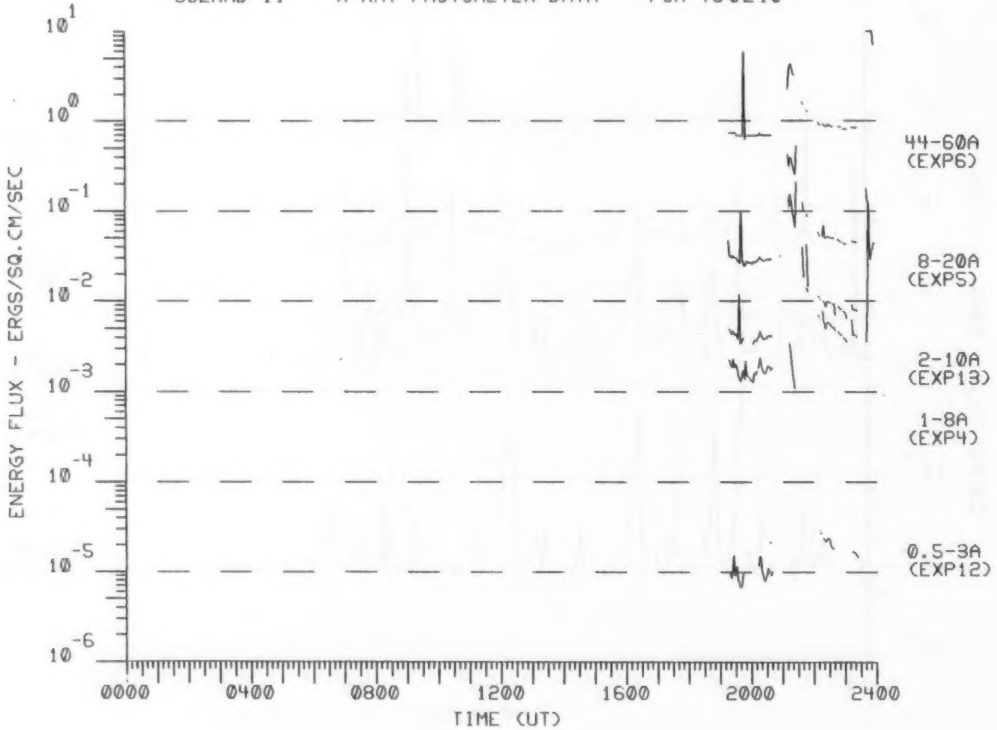

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780207
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
0000
0400
0800
1200
1600
2000
2400
TIME (UT)
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)

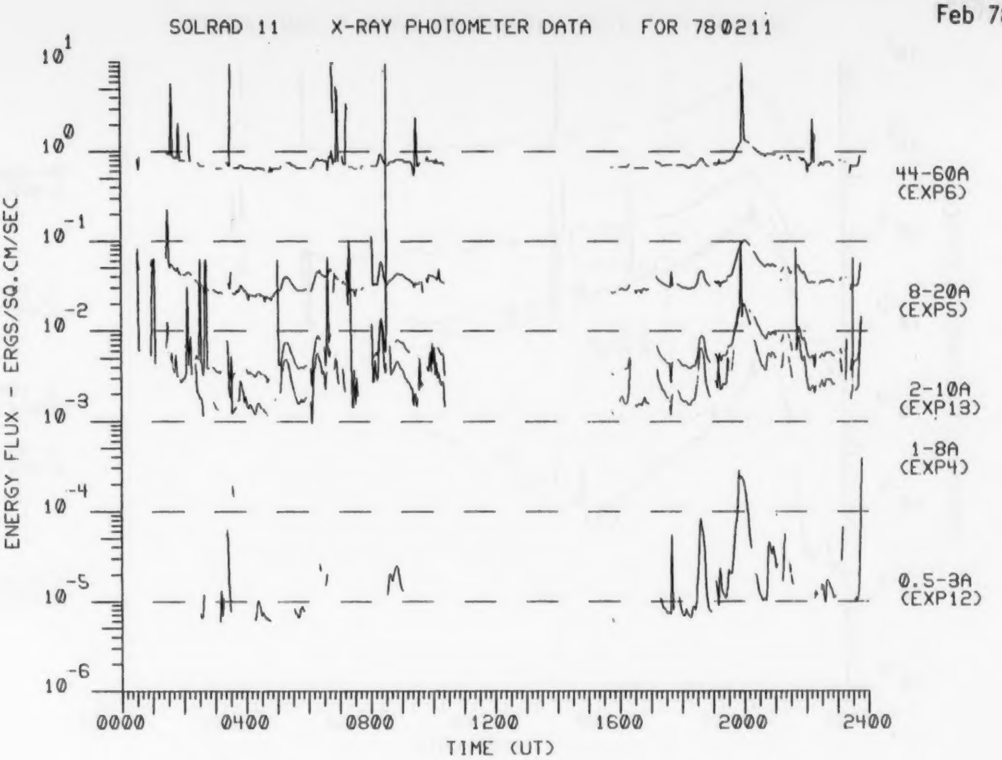

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780208
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
0000
0400
0800
1200
1600
2000
2400
TIME (UT)
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)

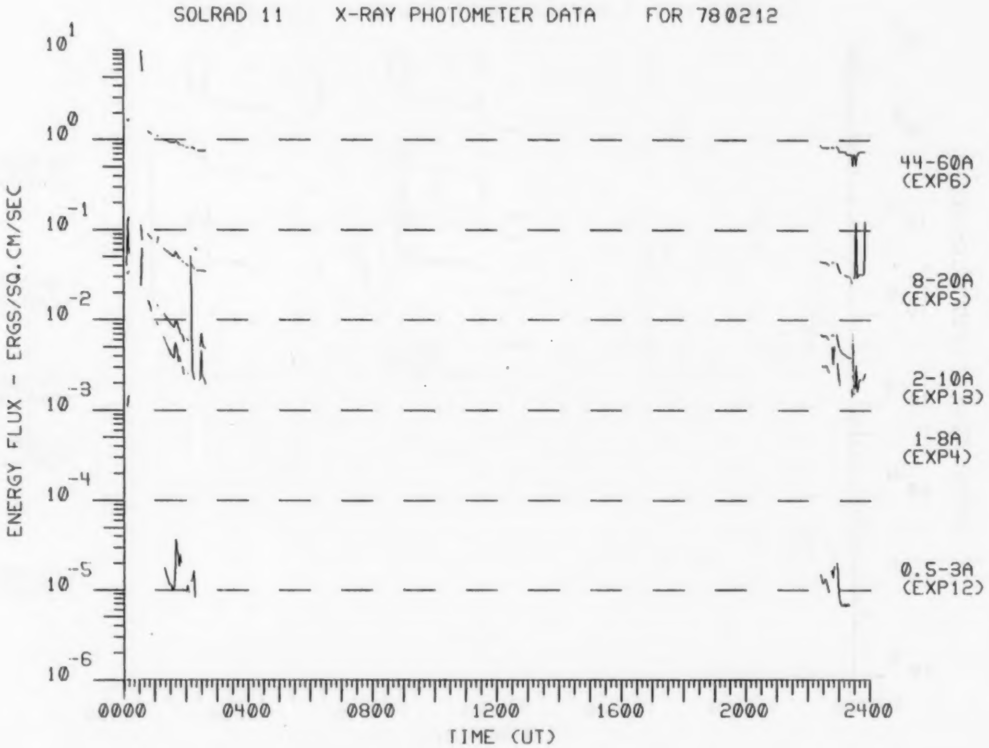
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780209

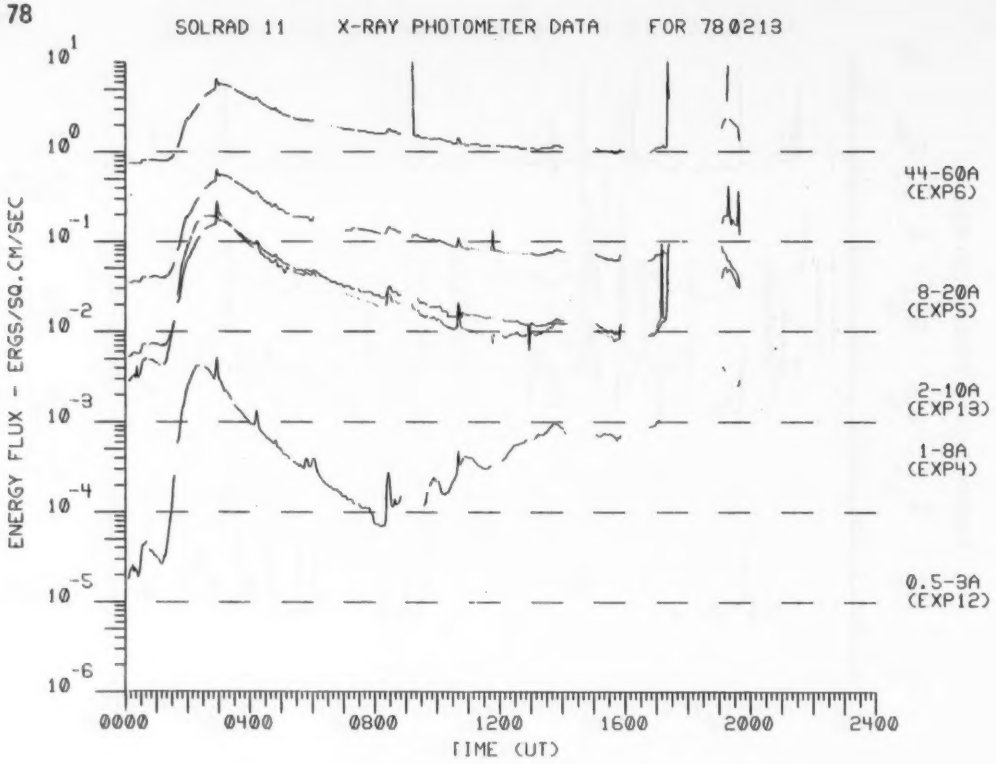


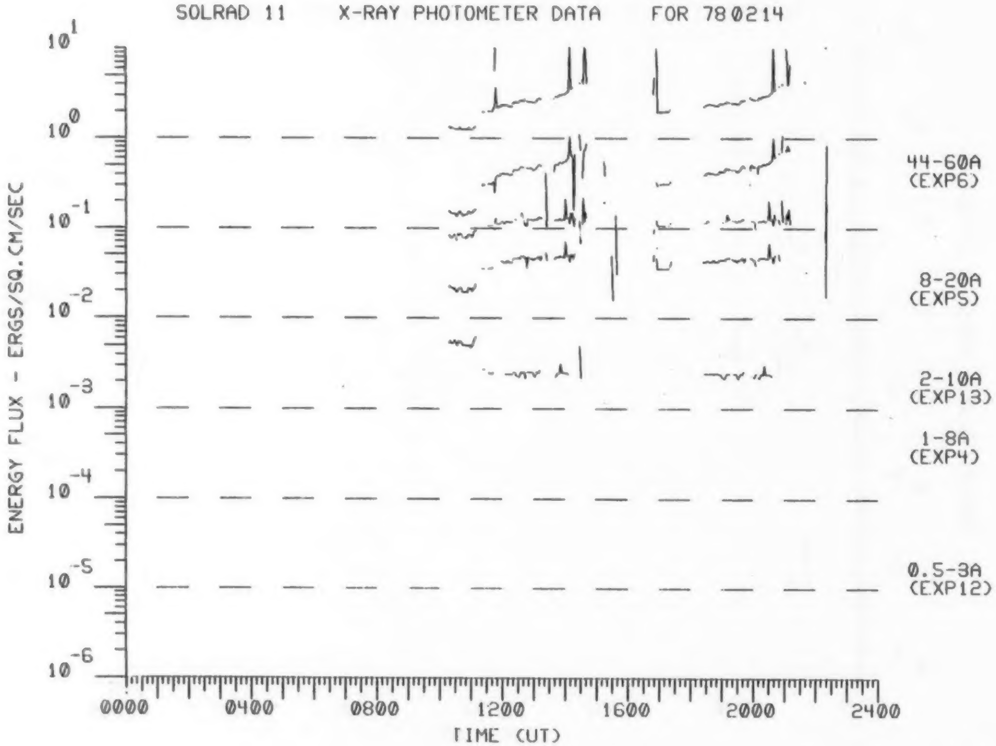
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780210

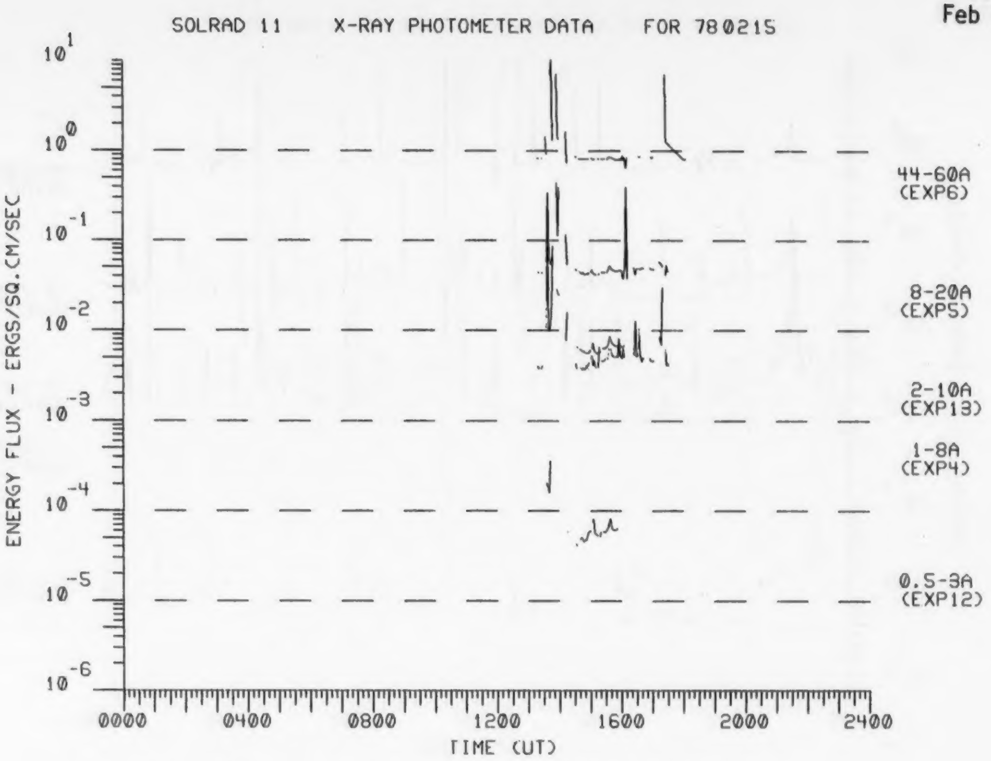


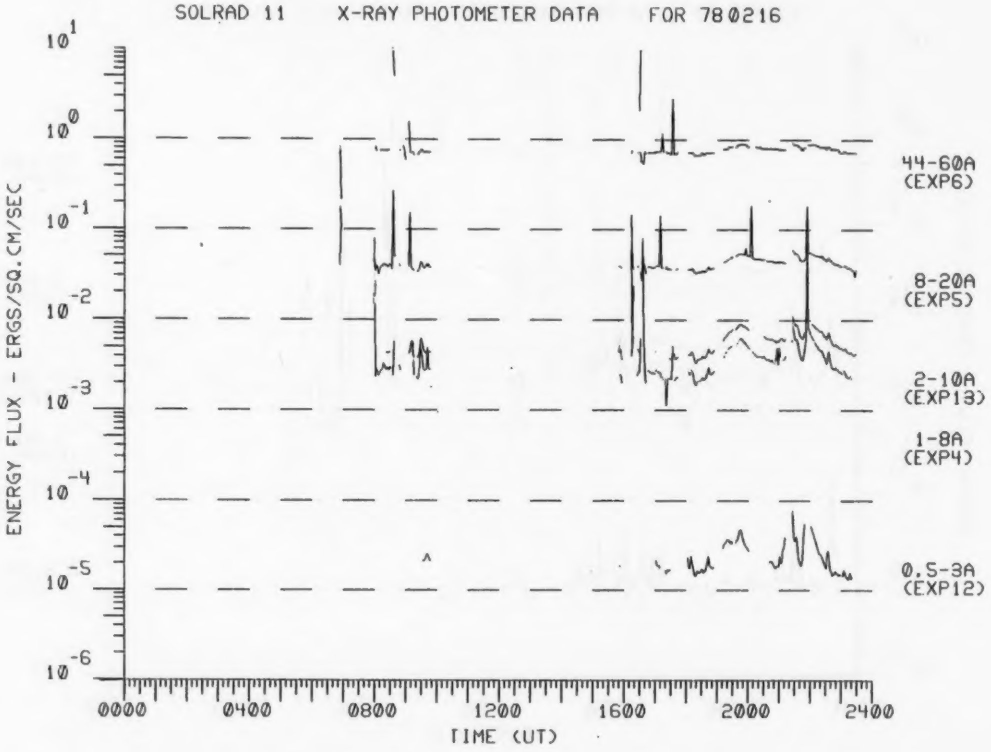

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780211
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

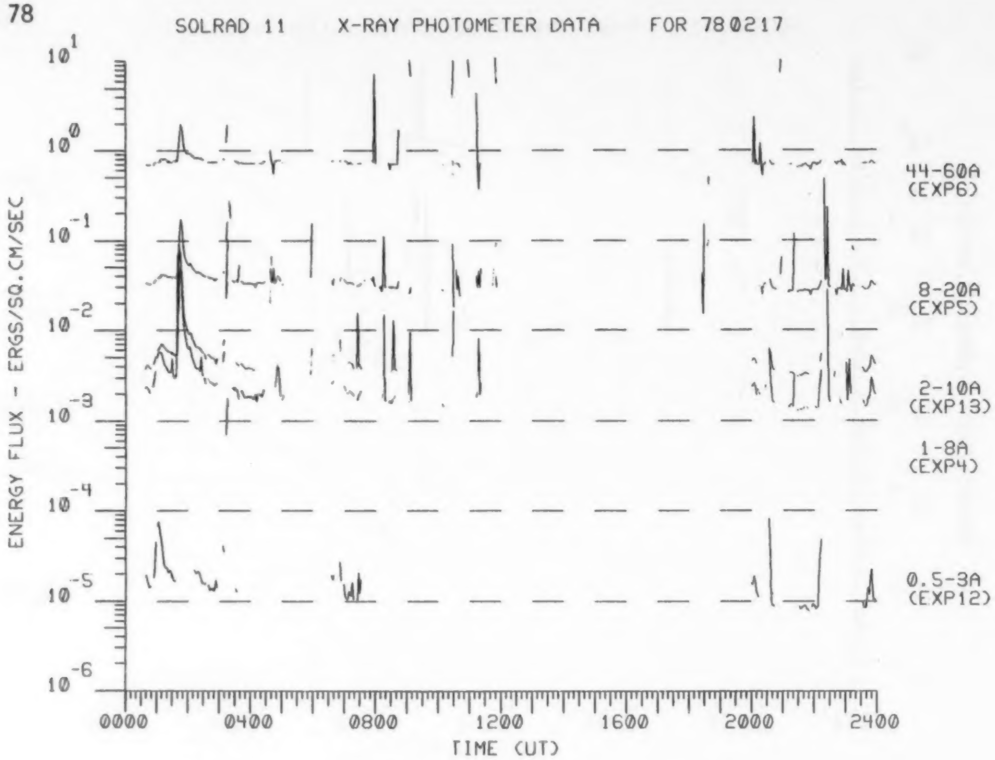

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780212
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

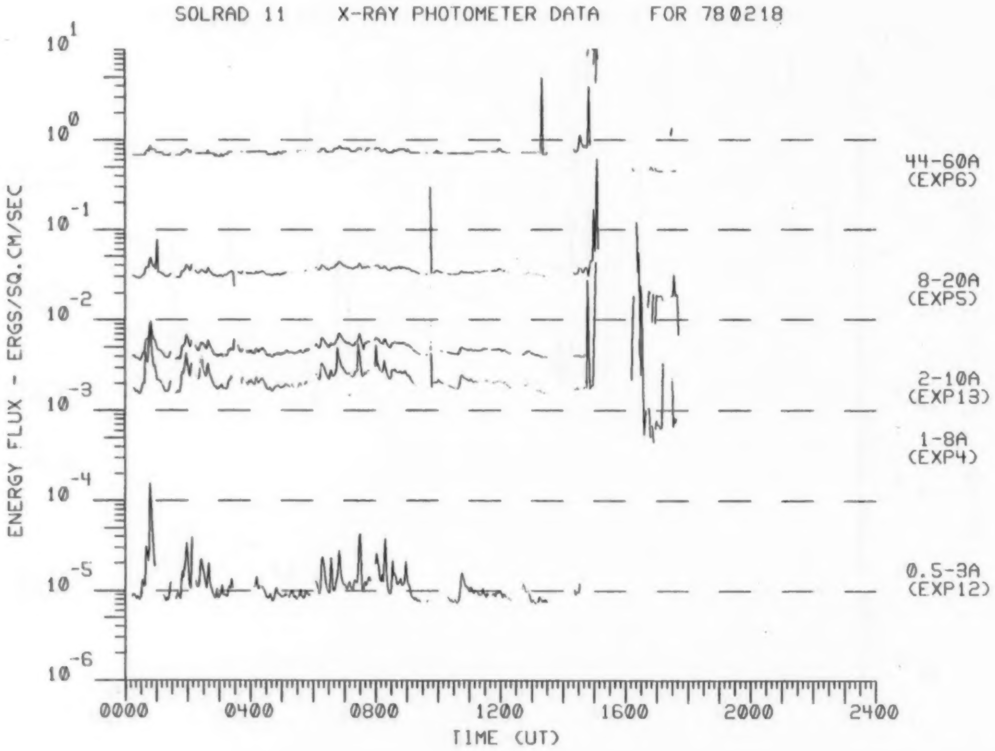

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780213
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

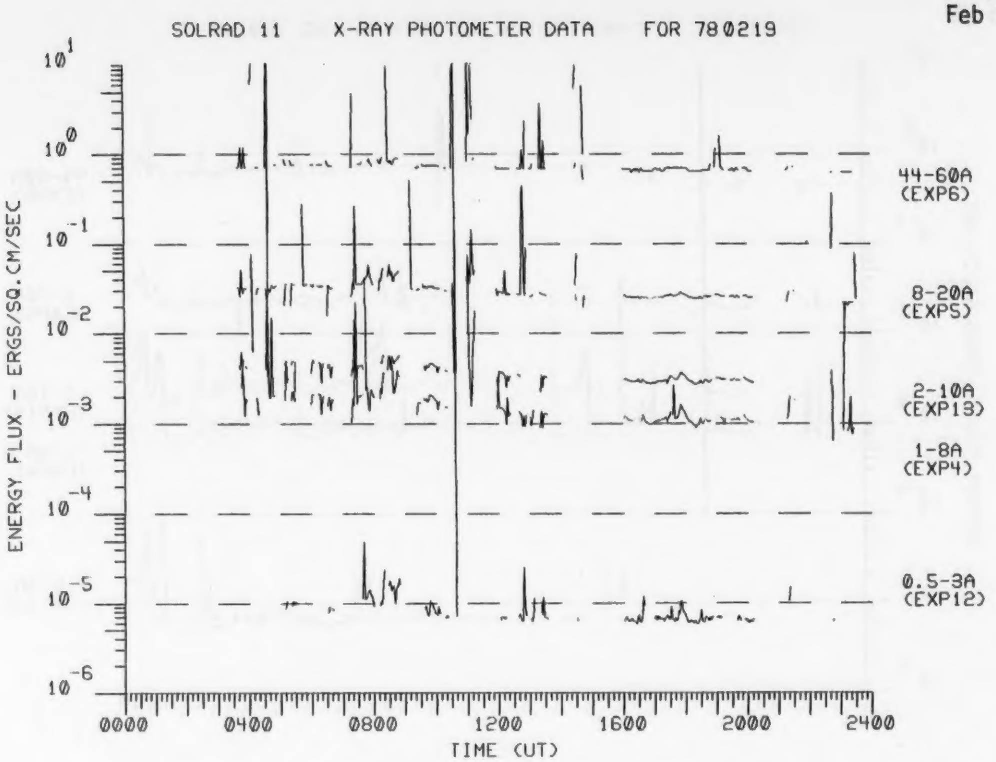

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780214
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

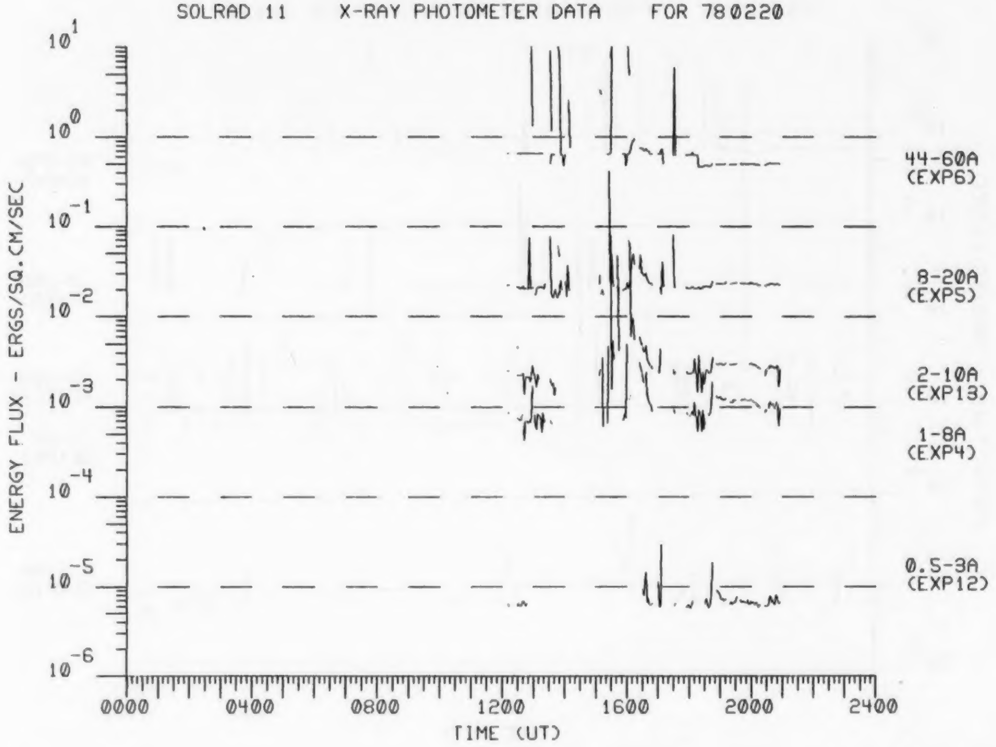

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780215
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000 0400 0800 1200 1600 2000 2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780216
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000 0400 0800 1200 1600 2000 2400
TIME (UT)

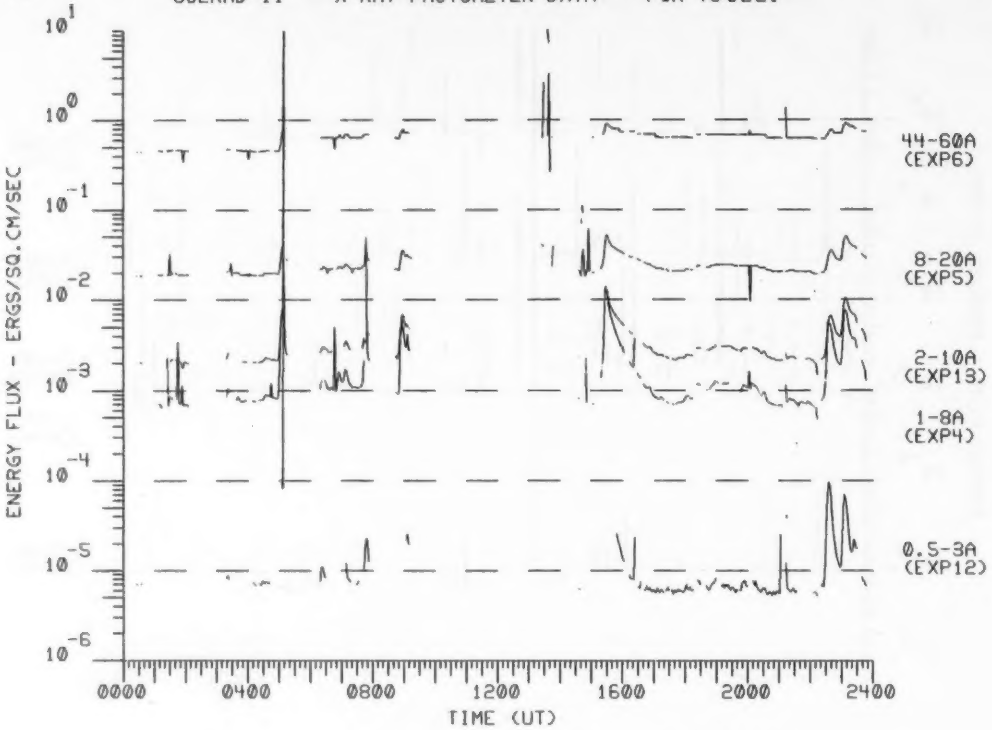

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780217
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000 0400 0800 1200 1600 2000 2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780218
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000 0400 0800 1200 1600 2000 2400
TIME (UT)

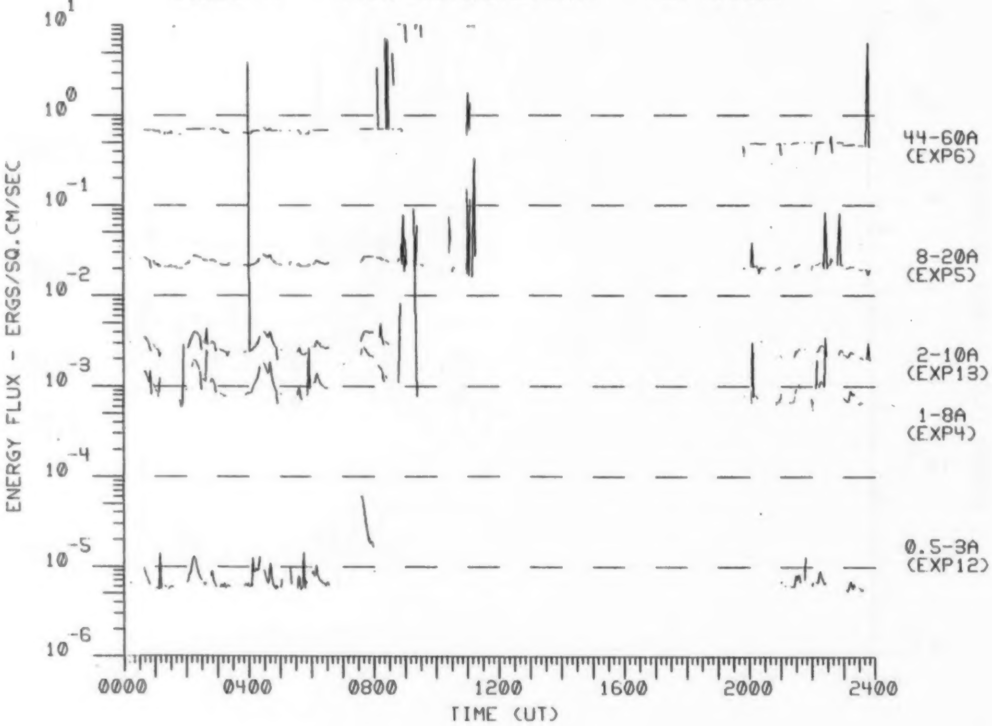

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780219
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
0000
0400
0800
1200
1600
2000
2400
TIME (UT)
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)

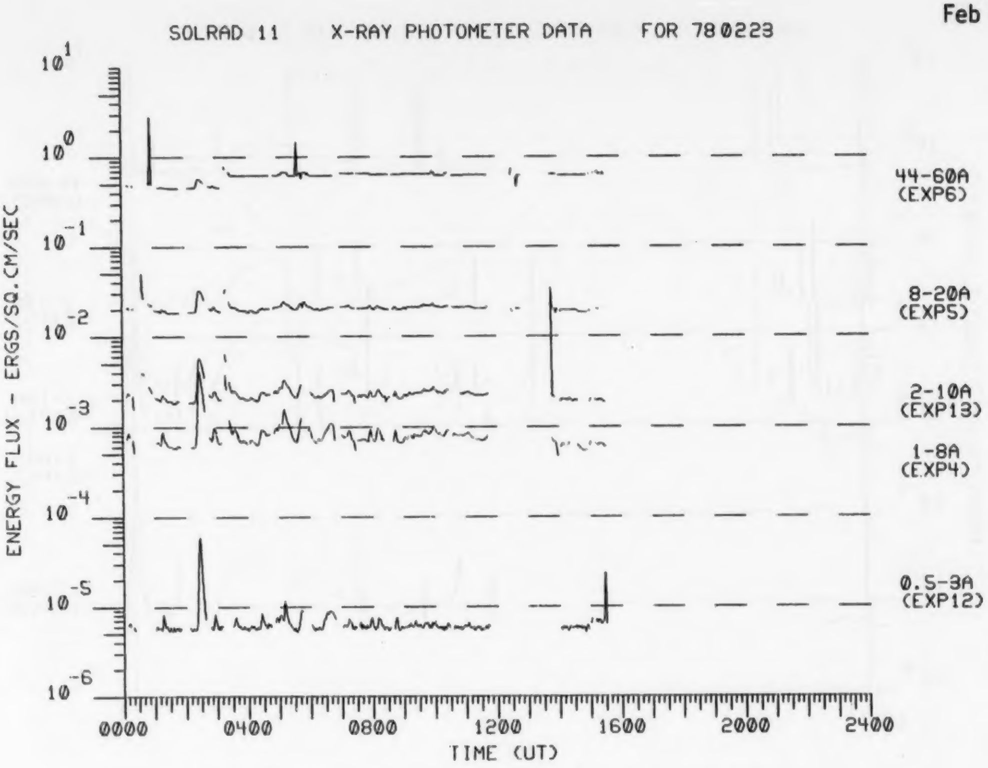

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780220
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
0000
0400
0800
1200
1600
2000
2400
TIME (UT)
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)

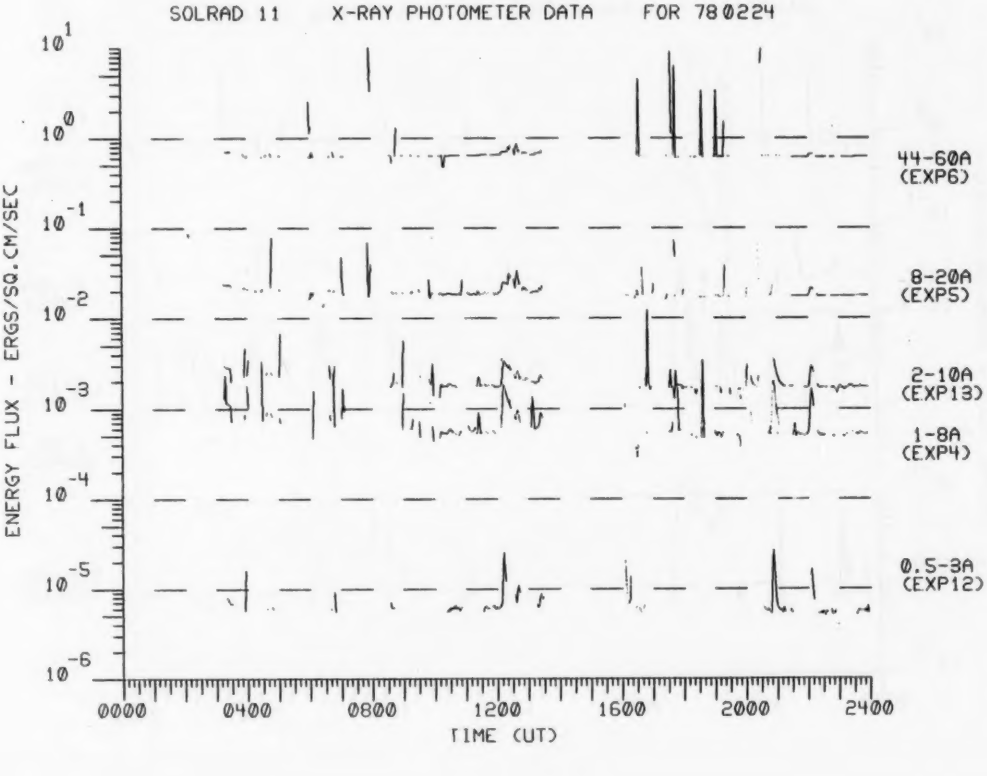
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780221

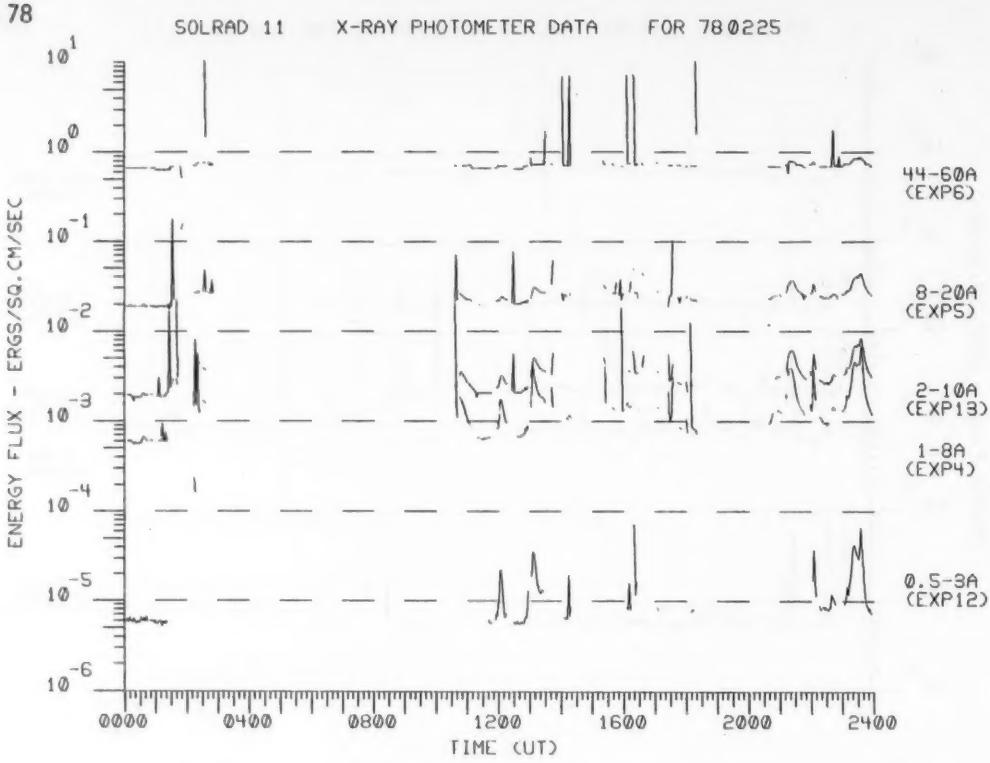


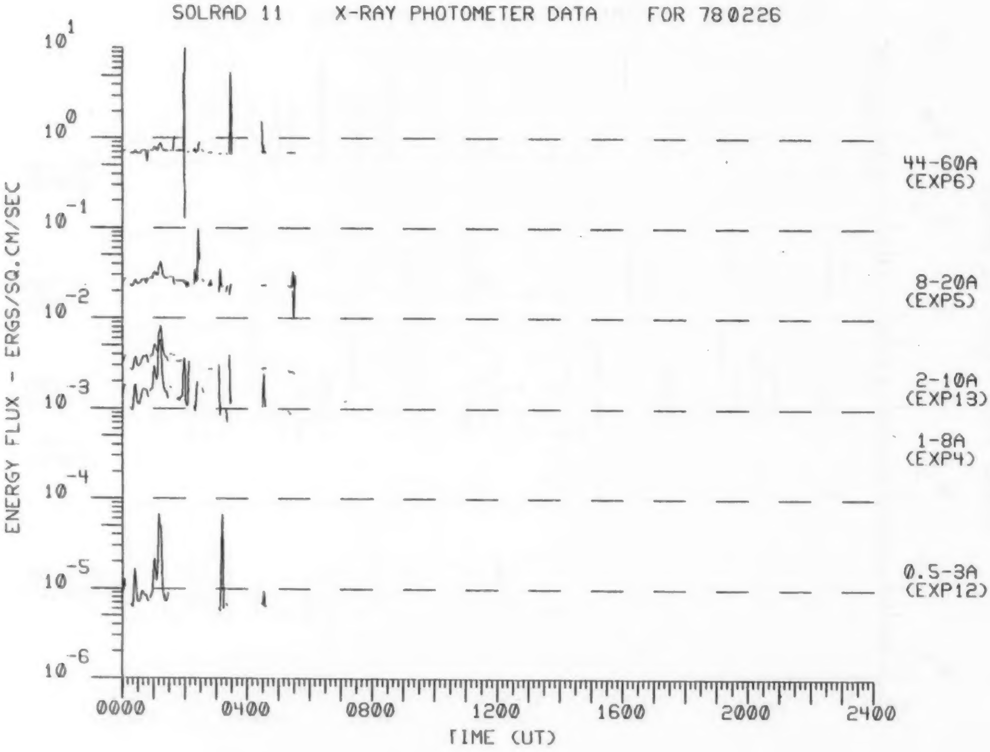
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780222



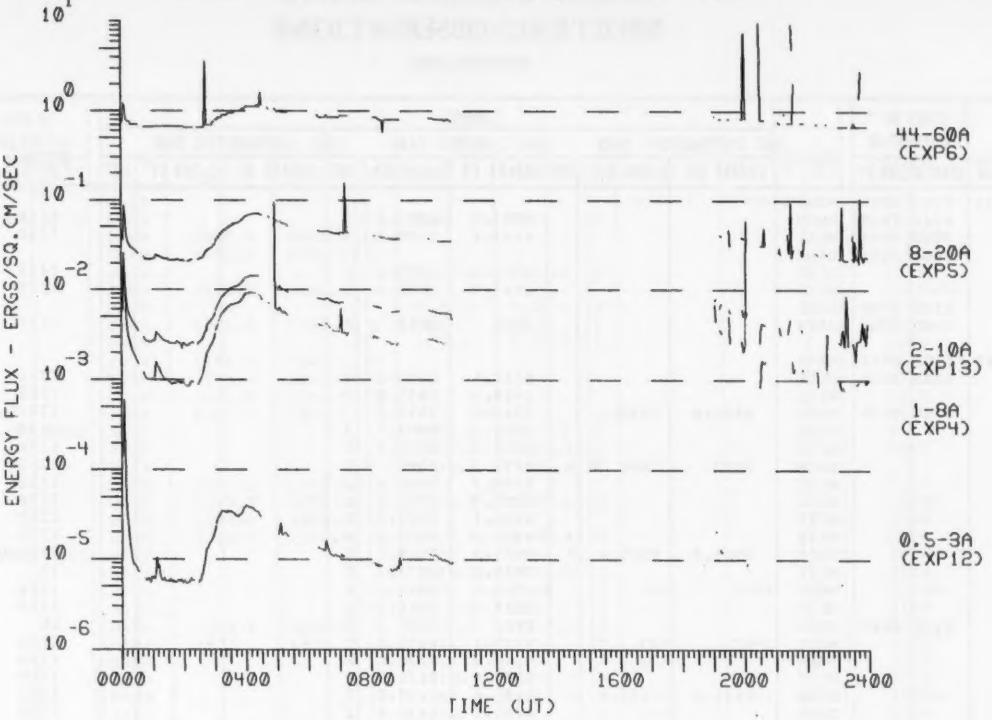

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780223
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780224
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

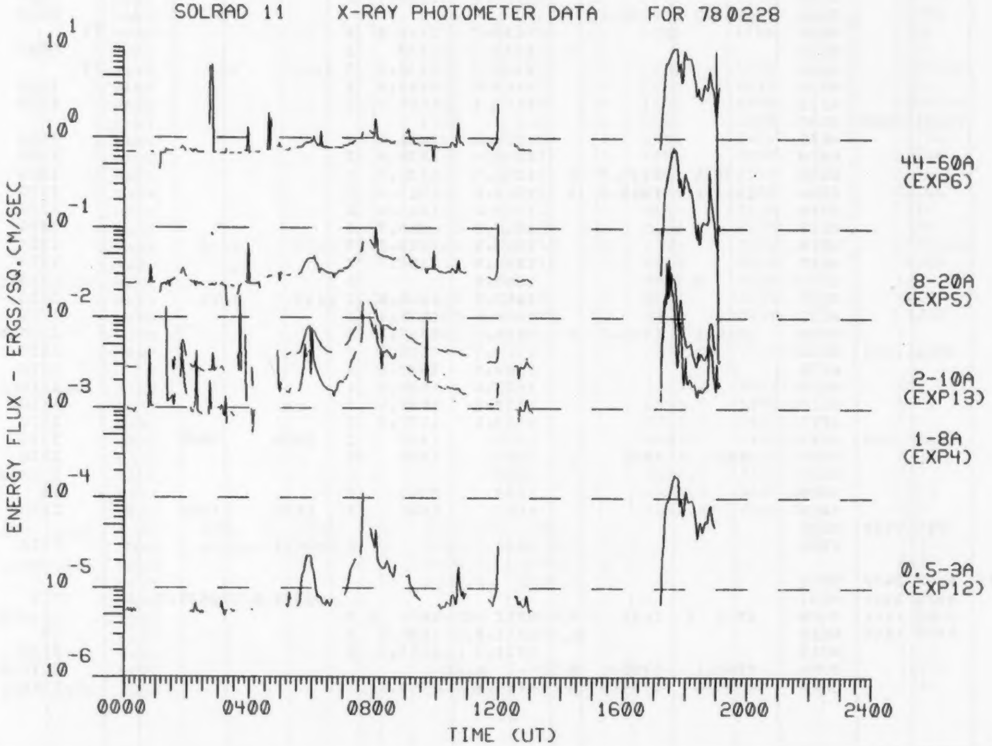

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780225
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000 0400 0800 1200 1600 2000 2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780226
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000 0400 0800 1200 1600 2000 2400
TIME (UT)

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780227



SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780228



SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0905	MANI										
	0716	1555	DURN				0753.8	0753.8	1				IIIB
	0747	1541	WEIS				1120.0	1120.8	1				IIIG
	1202	2152	SGMR										
			WEIS				1358.5	1359.4	1				IIIG
			WEIS				1507.0	1507.1	1				IIIB
	2142	2400	MANI										
	1400	2345	HARV				2208	2210	2				IIIG
02	0000	0940	MANI										
	0730	1505	WEIS				0812.5	0813.0	2				IIIG
			WEIS				0814.4	0819.0	3				IIIG
	0714	1604	DURN	0815.6	0818.3		0815.6	0818.8					IIIGG,DCIM
			WEIS				0822.3	0822.5	3				IIIB
			WEIS				0830.7	0830.9	1				IIIG
			DURN	0830	1604 D	1	0830	1604 D	1				IS,DC
			WEIS				0838.7	0841.0	2				IIIB
			WEIS				0852.9	0853.0	1				IIIB
			WEIS				0904.1	0904.5	2				IIIG
			WEIS				0925.2	0925.6	2				IIIG
			DURN	0925.2	0925.6	2	0925.2	0925.6	2				IIIG,U
			WEIS				0930.0	1532.0	3				IS
			WEIS				1009.5	1009.8	2				IIIG
			WEIS				1018.2	1018.3	1				IIIB
	1112	1505	OWIN				1112	1505	2				IC
			WEIS				1129.1	1133.5	2				IIIG
			OWIN				1130.3	1130.5	2				IIIG
			OWIN				1131.4	1131.6	2				IIIG
			DURN	1131.4	1133.5	3	1131.4	1133.5	3				IIIG
			OWIN				1132.2	1132.4	2				IIIG
			OWIN				1135.0	1135.5	3				IIIG
			DURN	1135.2	1140.0	3							DCIM
			WEIS				1135.2	1141.0	3				IV
			OWIN				1135.3	1139	3				CONT
			OWIN				1137.3	1138.3	3				IV
			WEIS				1149.8	1149.9	2				IIIG
			WEIS				1155.3	1155.5	2				IIIG
	1201	2153	SGMR										
			WEIS				1236.4	1236.6	2				IIIG
			OWIN				1236.4	1236.5	2				IIIG
			DURN	1236.4	1236.7	1	1236.4	1236.7	1				IIIG
			DURN	1312.2	1313.8	3	1312.2	1313.8	3				IIIG
			OWIN				1312.2	1312.4	2				IIIG
			WEIS				1312.2	1313.7	3				IIIG
			OWIN				1313.5	1313.7	3				IIIG
			WEIS				1358.5	1358.7	1				IIIB
			OWIN				1358.8		2				IIIB
			WEIS				1412.0	1413.4	2				IIIG
			WEIS				1434.5	1435.4	2				IIIG
			DURN	1516.1	1549.2	3	1516.1	1549.2	3				IIIG,N
	1518	1543	WEIS				1518.9	1519.0	2				IIIG
			WEIS				1520.8	1521.0	2				IIIG
			WEIS				1522.4	1522.7	1				IIIG
			WEIS				1530.0	1530.4	2				IIIG
			WEIS				1533.8	1535.2	3				IIIG
	1400	2345	HARV				1534	1535	2	1534	1535	2	IIIG
			HARV	1549	1550	1	1549	1550	1				IIIG
			HARV				1600		1				IIIB,W
			HARV				1609	2345	1				IN
			HARV				1640	1641	3	1640	1641	3	IIIG
	2206	2400	MANI										
			HARV				2233		3	2233		3	IIIG
03	0000	0420	MANI										
	0426	0937	MANI							0535.3	0535.7	1	III
	0712	1611	DURN	0712 E	1611 D	3	0712 E	1611 D	3				IC,S,DC
	0728	1545	WEIS				0731.0	1436.0	3				IS
			WEIS				0731.0	1533.8	3				IIIS
			DURN	0742.1	0758.2	3							DCIM,N
			DURN	0748.6	0749.6	3	0748.6	0749.6	3				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			MANI							0749.5	0749.8	1	III
	0805	1210	DWIN				0805	1210	2				IC
			DURN	0810.2	0913.6	2							IIIG,N
			DURN	0945.8	0952.4	3							IIIG,N
			DWIN				1036.5	1036.2	2				IIIG
			DURN	1045.2	1045.7	2							IIIG,RS
			DWIN				1106.1	1106.5	2				IIIG
			DURN	1109.6	1111.7	2	1110.4	1110.7	1				IIIG
			DWIN				1138.3	1138.5	2				IIIG
			DURN	1142.6	1143.4	1							IIIG
			DURN	1153.4	1218.9	2							IIIG,N
			DURN	1251.8	1251.9	3							IIIG
			DURN	1314.7	1314.7	2							IIIG
	1200	2155	SGMR				1322.0	1323.0	2				V
			SGMR				1322.0	2155.0	1				CONT
			WEIS				1339.5	1340.8	3				
			DURN	1347.1	1347.4	3							IIIG
			DURN	1349.5	1350.4	1	1349.5	1350.5	3				IIIGG
			DURN	1351.4	1351.4	1							IIIG
			DURN	1355.3	1355.4	1	1355.3	1355.4	3				IIIG
	1400	2345	HARV				1409	1514	1				IN,W
			WEIS				1454.4	1458.4	3				IIIG
			HARV				1454	1458	2	1454	1458	2	IIIGG
			WEIS				1535.4	1535.6	3				IIIG
			DURN	1536.2	1546.9	3	1535.5	1547.0	3				IIIG,N
			HARV	1537	1538	3	1534	1541	3	1534	1541	3	IIIGG
			HARV				1546		3	1546		3	IIIG
			DURN				1608.8	1608.9	3				IIIG
			HARV				1609	1611	3	1609	1611	3	IIIGG
			HARV				1638		1	1638		1	IIIB
			HARV				1643	1656	3	1643	1656	3	IIIGG
			HARV				1700	1711	3	1700	1711	3	IIIGG
			HARV				1750	1756	1	1750	1756	1	IIIG
			SGMR				1802.0	1815.6	2				IIIG
			HARV	1806	1815	2	1759	1819	3	1759	1819	3	IIIGG,V
			HARV				1826	1837	3	1826	1837	3	IIIG
			HARV				1842	1858	3	1842	1858	3	IIIGG,V
			HARV				1914	1920	3	1914	1920	3	IIIGG,V
			HARV				2016	2021	3	2016	2021	3	IIIGG
			HARV				2026	2037	3	2026	2037	3	IIIGG
			HARV				2047	2051	3	2047	2051	3	IIIG
			HARV				2101	2108	3	2101	2108	3	IIIGG
			HARV				2114	2115	3	2114	2115	3	IIIG
			HARV				2128	2129	1	2128	2129	1	IIIG
			HARV	2147	2148	1	2145	2148	3	2145	2148	3	IIIGG,V
			HARV				2210	2216	3	2210	2216	3	IIIGG
	2141	2400	MANI							2238.6	2238.8	2	III
			HARV	2238	2239	2	2238	2239	3	2238	2239	3	IIIG
			HARV				2302	2306	3	2302	2306	3	IIIGG
			HARV				2302	2312	1				I
			MANI							2304.0	2305.3	2	IIIG
04	0000	0944	MANI							0210.1	0210.5	1	III
			MANI							0250.7	0255.6	2	IIIG
			MANI							0359.8	0400.1	1	III
			MANI							0409.2	0409.6	2	III
			MANI							0414.3	0415.0	1	IIIG
			MANI							0433.3	0433.7	2	III
			MANI							0435.7	0437.3	2	IIIG
			MANI							0610.8	0611.2	1	III
	0711	1612	DURN	0711 D	1321	1	0711 D	1321	1				IS,DC
			DURN	0721.7	0722.2	3	0721.7	0722.2	3				IIIGG
	0725	1546	WEIS				0740.4	0740.7	2				IIIG
			WEIS				0830.6	0925.2	1				IIIN
			DURN	1352.1	1352.2	1							IIIG
			WEIS				1353.8	1353.9	2				IIIB
			WEIS				1410.4	1410.6	2				IIIU
	1400	2345	HARV				1411		2				IIIB
			WEIS				1434.4	1435.8	2				IIIG
	1159	2156	SGMR				1434.8	1435.2	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
04			HARV				1435		1	1435		1	IIIB
			WEIS				1517.7	1517.8	2				IIIG
			WEIS				1524.3	1524.7	1				IIIG
			WEIS				1529.2	1529.4	1				IIIB
			HARV				1550	1552	3	1550	1552	3	IIIG
			DURN				1552.2	1552.3	3				IIIG
			HARV				1622	1623	2	1622	1623	2	IIIG
			SGMR				1650.0	2156.0	1				CONT
			HARV				1707		1	1707		1	IIIG
			HARV				1745		2	1745		2	IIIB
			HARV				1908		3	1908		3	IIIB,V
	2212	2400	MANI										
05	0000	0937	MANI										
	0709	1506	DURN	0709 E	1506 D	2	0709 E	1506 D	2				IS,C,DC
	0725	1001	WEIS				0728.0	1537.0	3				IN,DC,C
			WEIS				0729.0	1520.0	3				IIIN
			DURN	0744.4	0744.4	1	0744.4	0744.4	1				III
	1400	2122	HARV				1404	1513	2				I
	1023	1548	WEIS				1526.2	1528.3	2				IIIG
			WEIS				1542.0	1542.6	2				IIIG
			WEIS				1545.2	1545.5	3				IIIB
	1158	2157	SGMR				1545.4	1545.5	1				III
			HARV				1545		3				IIIG
			HARV				1732		1	1732		1	IIIB
			SGMR				1806.6	1806.8	1				III
			HARV				1806	1807	3	1806	1807	3	IIIG
			HARV				1835		1	1835		1	IIIB
			HARV				1856		1	1856		1	IIIB
			HARV				1931		1	1931		1	IIIG
			SGMR				1954.2	1954.5	2				III
			HARV				1954		3	1954		3	IIIG
			HARV				1959		1	1959		1	IIIG
			HARV				2044	2049	2	2044	2049	2	IIIG
	2149	2400	MANI										
	2311	2345	HARV										
06	0000	0943	MANI										
			WEIS				0726.1	1547.0	1				IIIN
	0723	1549	WEIS				0729.3	1530.0	1				IN
	1157	2159	SGMR										
	1400	2345	HARV				1407	1526	1				IN
			HARV				2001		1	2001		1	IIIB
	2138	2400	MANI										
07	0000	0849	MANI										
	0721	1429	WEIS				0725.0	1429.0	2				IS
			WEIS				0833.5	1429.0	1				IIIN
	1400	2345	HARV				1410	1604	1				IN,W
			HARV				1818		1	1818		1	IIIB
			HARV				1903		1	1903		1	IIIB
			HARV				1914	2059	1	1914	2059	1	IIIN
	2127	2400	MANI										
			HARV				2150		1	2150		1	IIIB
			SGMR										
08	0000	0943	MANI							0323.9	0324.2	1	III
	0706	1614	DURN	0706 E	1614 D	2	0706 E	1614 D	2				I,DC
			DURN	0727.3	0728.9	1	0728.2	0728.9	2				IIIGG
	0729	1553	WEIS				0728.0	1527.0	1				IIIN
			WEIS				0729.0	1545.0	2				IS
			DURN	0847.0	0847.3	2							IIIG
			DURN	0848.5	0848.7	2	0848.5	0848.7	2				IIIG
			DURN	0850.2	0850.2	1	0850.2	0850.2	1				III
	1402	2350	HARV				1437		1				IIIB
			WEIS				1448.0	1449.3	3				IIIG
			HARV				1448	1449	2	1448	1449	2	IIIG
			WEIS				1453.5	1457.8	3				IIIG
			HARV				1453	1456	2	1453	1456	2	IIIG
			HARV				1612		1	1612		1	IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08			HARV				1619	1625	3	1619	1625	3	IIIG
			HARV				1652		2	1652		2	IIIB
			HARV				1713	1714	3	1713	1714	3	IIIG,V
			HARV				1720	1722	2	1720	1722	2	IIIG
			HARV				1758	1800	2	1758	1800	2	IIIG
			HARV				1834		1	1834		1	IIIG
			HARV				1909		2	1909		2	IIIG
			HARV	1956	1957	2	1956	1957	2				IIIG
			HARV				2012		2	2012		2	IIIG
	2147	2400	MANI										
			HARV				2225		1	2225		1	IIIG
			HARV	2253	2350	2	2253	2350	2				I
			SGMR										
09	0000	0939	MANI										
	0705	1615	DURN	0705 E	1615 D	2	0705 E	1615 D	2				I,DC
	0718	1553	WEIS				0721.0	1516.0	1				IIIN
			DURN	0842.9	0842.9	1							III
			WEIS				0947.0	0947.0	3				IIIG
			DURN				0947.1	0947.5	3				IIIG
			WEIS				0951.6	1248.0	2				IS,DC
			WEIS				1028.0	1029.7	2				IIIG
			WEIS				1122.3	1123.0	3				IIIG
			DURN	1151.8	1159.4	2	1152.9	1157.3	3				IIIGG
			WEIS				1152.0	1153.6	3				IIIG
			WEIS	1156.0	1159.0	3							IIIG
	0718	1553	WEIS				1205.3	1207.1	2				IIR S
			DURN	1251.2	1251.2	1							IIIG
	1153	2203	SGMR				1305.5	1306.0	1				IIIG
			DURN	1312.2	1314.2	3	1313.5	1313.6	3				IIIGG
			DURN	1405.1	1405.6	2	1405.1	1405.6	2				IIIG
	1404	2345	HARV				1405		2				IIIG
			HARV				1405	2345	1				I
			SGMR				1511.9	1515.9	1				IIIG
			DURN	1600.4	1601.9	3							IIIG
			DURN	1601.8	1605.0	1							DCIM
			HARV	1602	1603	2							IIIG
			DURN	1603.1	1606.5	3	1603.1	1607.5	3				II
			HARV	1604	1605	1	1604	1612	2				II
			HARV				1751		2	1751		2	IIIB
			HARV				1906	1943	1	1913	1943	1	IIIN
			SGMR				1958.4	1959.6	1				V
			HARV				1958	2004	2	1958	2004	2	IIIGG
			SGMR				2003.9	2004.0	1				III
			HARV				2054		2	2054		2	IIIG
			HARV				2127	2132	2	2131	2132	2	IIIG
			HARV				2141		2	2141		2	IIIB
	2142	2400	MANI										
			HARV				2209		2	2209		2	IIIB
10	0000	0940	MANI							0043.5	0045.8	2	IIIG
			MANI							0333.6	0334.3	1	IIIG
			MANI							0542.9	0543.2	1	III
			MANI							0546.7	0546.9	1	III
	0804	1630	DURN	0704 E	1630 D	2	0704 E	1630 D	2				I,DC
			DURN	0755.6	0758.3	3	0755.6	0758.3	3				IIIGG
	0718	1557	WEIS				0757.0	1536.0	3				IS
			DURN	0806.1	0808.4	1	0806.1	0808.4	3				IIIG
			WEIS				0807.0	1557.0	1				IIIN
	1152	2204	SGMR				1314.8	1315.0	1				III
			SGMR				1350.0	2204.0	1				CONT
			SGMR				1400.2	1401.0	1				V
	1405	2345	HARV				1406	2341	1				IN
			DURN	1444.3	1446.4	1	1444.3	1446.4	2				IIIG
			HARV				1444		1				IIIG
			SGMR				1514.8	1515.0	1				III
			DURN				1622.4	1627.0	3				IIIG,N
			HARV				1624	1627	1				IIIG
			SGMR				1745.2	1746.8	2				V
			HARV	1745	1746	2	1738	1751	2	1738	1751	2	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
10			HARV				1842	1843	1	1842	1843	1	IIIG
			HARV				1948	1955	2	1951	1955	2	IIIG
			HARV				2045		2				IIIG
			HARV				2112	2113	1	2112	2113	1	IIIG,W
			HARV				2118	2127	3	2118	2127	3	II
			HARV	2128	2136	2	2124	2136	3	2129	2136	3	IIIGG
	2155	2400	MANI										
			HARV				2256	2258	2	2256	2258	2	IIIG
			HARV				2306		2				IIIB
			HARV				2339		2				IIIG
11	0000	0947	MANI							0015.9	0016.5	2	III
			MANI							0053.0	0053.3	1	III
			MANI							0211.8	0213.5	1	IIIG
			MANI							0242.5	0243.7	2	IIIG
			MANI							0303.4	0304.0	1	III
			MANI							0319.7	0322.5	3	IIIG
			MANI							0504.0	0504.3	1	III
			MANI							0510.3	0514.3	1	IIIG
			MANI							0524.8	0525.2	1	III
	0702	1515	DURN	0702 E	1515 D	2	0702 E	1515 D	2				IC,DC
	0715	0728	WEIS										
			MANI							0752.5	0805.8	2	IIIG
			DURN	0752.5	0821.0		0752.5	0821.0					IIIGG,N
			MANI							0814.0	0820.5	1	III
			DURN	0814.3	0822.0	1							DCIM
	0852	1559	WEIS				0853.0	1559.0	3				IS
			WEIS				0934.0	1458.0	2				IIIN
			DURN	0936.3	0936.7	1	0936.3	0936.7	1				IIIG
			WEIS				1040.4	1042.2	3				IIIGG
	1150	2205	SGMR										
			WEIS				1157.9	1159.2	3				IIIGG
			DURN	1201.5	1319.3	3	1158.1	1319.3	3				IIIG,N
			WEIS				1231.9	1234.3	3				IIIGG,V
	1400	2345	HARV				1403	2345	2				IN
			DURN	1406.4	1408.4	2	1406.4	1408.4	2				IIIGG
			HARV				1406	1408	2				IIIG
			DURN	1417.0	1417.7	2	1417.0	1417.7	2				IIIG
			WEIS				1424.3	1431.1	3				IIIGG,V
			DURN	1424.5	1429.2	3	1424.5	1429.2	3				IIIGG,DCIM
			HARV	1427	1429	2	1425	1429	3	1425	1429	3	IIIGG,V
			DURN	1457.1	1458.4	3	1457.1	1458.4	3				IIIGG
			HARV				1642		1	1642		1	IIIG
			HARV	1839	1842	2	1830	1842	2	1830	1842	2	IIIGG
			HARV				1916	1923	3	1916	1923	3	IIIGG
			HARV				1928	1937	3	1928	1937	3	IIIGG
			HARV				2021	2037	1	2021	2037	1	IIIN
			HARV				2058		3	2058		3	IIIG
			HARV				2120	2122	3	2120	2122	3	IIIGG,V
			HARV	2135	2148	2	2135	2148	3	2135	2148	3	IIIGG
			HARV	2157		2	2155	2202	2	2155	2202	2	IIIGG
	2202	2400	MANI										
			HARV				2210	2213	2	2210		1	IIIG
			HARV				2229		2				IIIB
			HARV				2245		1				IIIB
			HARV	2300		2	2300	2302	2				IIIG
			HARV				2319		2				IIIB
			HARV				2334	2336	2				IIIG
12	0000	0940	MANI							0047.3	0047.6	1	III
			MANI							0131.9	0140.1	2	IIIG
			MANI							0245.8	0246.0	1	III
			MANI							0248.6	0248.8	1	III
			MANI							0348.5	0349.0	1	III
			MANI							0402.2	0411.0	2	IIIG
			MANI							0417.8	0418.2	2	III
			MANI							0523.1	0525.0	1	IIIG
			MANI							0640.8	0641.1	1	III
	0713	1600	WEIS				0724.5	1600.0	3				IS,DC,C
			WEIS				0816.8	1554.0	2				IIIN

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	Times of Observation – Start UT	Times of Observation – End UT	Station	Decimetric Band – Start UT	Decimetric Band – End UT	INT	Metric Band – Start UT	Metric Band – End UT	INT	Dekametric Band – Start UT	Dekametric Band – End UT	INT	Spectral Type
12	0837	1631	DURN	0837 E	1631 D	3	0837 E	1631 D	3				I,DC
			DURN	0837 E	1017	3	0837 E	1017	3				IIIG,N
			WEIS				1151.7	1153.2	3				IIIG
			DURN	1154.2	1154.2	1	1154.2	1154.2	1				III
			DURN	1159.9	1200.0	1	1159.9	1200.0	3				IIIG
			WEIS				1305.0	1331.0	3				IIIG
	1149	2207	SGMR				1305.0	1323.3	3				CONT
			DURN	1307.2	1320.4	3	1307.2	1320.4	3				IIIGG
			SGMR				1323.3	2206.0	1				CONT
	1400	2345	HARV	1400	1523	2	1401	2257	2				I
			DURN	1501.7	1501.9	3	1501.7	1501.9	3				IIIG
			HARV	1502		2	1502		2				IIIG
			DURN	1603.1	1603.7	2							IIIGG
			HARV				1639		1	1639		1	IIIB
			HARV				1812	2119	2	1813	2119	2	IIIS
			HARV	2121	2319	2							I
			HARV				2141		2	2141		2	IIIB
	2143	2400	MANI										
			HARV				2248	2249	2	2248	2249	2	IIIG
13	0000	0409	MANI							0144.8	0314.2	1	CONT
	0427	0941	MANI							0434.2	0435.1	2	IIIG
			MANI							0442.5	0442.9	2	IIIG
			MANI							0520.6	0520.7	1	III
			MANI							0541.3	0542.8	1	IIIG
			MANI							0545.8	0546.2	2	III
	0655	1632	DURN	0655 E	0930	3	0655 E	0930	3				IV
	1111	1602	WEIS				0716.0	1602.0	3				IS,C
	0711	1055	WEIS				0716.0	1602.0	2				IIIS
			DURN	0803.1	0841.4	3	0803.1	0841.4	3				IIIGG,N
			MANI							0803.2	0803.7	1	III
			MANI							0812.7	0813.0	1	III
			MANI							0819.0	0827.6	1	IIIG
			MANI							0833.7	0835.9	1	IIIG
			MANI							0841.0	0842.3	1	IIIG
			DURN	0930	1632 D	3	0930	1632 D	3				IC,DC
			DURN	0938.9	0939.1	3							IIIG
			DURN	1000.5	1000.7	1							IIIG
			DURN	1119.9	1120.2	1							IIIG
	1148	2208	SGMR										
			DURN	1333.5	1333.6	3	1333.5	1333.6	3				IIIG,RS
			DURN	1342.1	1347.4	2							IIIG,N
	1400	2345	HARV				1402	2345	2				I
			DURN	1443.1	1443.6	3							IIIGG
			HARV	1443	1444	3							I
			DURN	1445.3	1445.3	3	1445.3	1445.3	3				III
			HARV				1452		2	1452		2	IIIG
			HARV				1505		2				IIIB
			HARV				1611	2215	2	1611	2215	2	IIIS
	2143	2400	MANI										
			HARV				2329	2331	2				IIIG
14	0000	0944	MANI							0454.4	0455.5	1	IIIG
			MANI							0551.8	0552.6	1	III
	0653	1633	DURN	0653 E	1633 D	1	0653 E	1633 D	1				IC,DC
			WEIS				0712.0	1556.0	2				IIIS
	0710	1604	WEIS				0712.0	1551.0	2				IS
			MANI							0723.5	0729.1	1	III
			MANI							0735.0	0735.1	1	III
			MANI							0742.2	0742.4	1	III
			MANI							0806.5	0807.5	1	III
			MANI							0834.0	0834.1	1	III
			WEIS				1027.9	1029.8	3				IIIG
			DURN	1028.3	1028.7	3	1028.3	1028.7	3				IIIG
	1146	2209	SGMR				1146.0	2209.0	1				CONT
	1400	2345	HARV				1400	2340	1				I
			DURN	1434.4	1436.5	3	1434.4	1436.5	3				IIIGG
			WEIS				1434.5	1437.4	3				IIIG
			SGMR				1434.6	1437.5	2				V
			HARV				1434	1437	2	1435		1	IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
14			WEIS				1456.8	1457.1	2				IIIG
			HARV				1457		1				IIIB
			WEIS				1507.5	1509.5	3				IIIG
			DURN	1507.6	1508.1	3	1507.6	1508.1	3				IIIGG
			SGMR				1507.8	1509.4	3				V
			HARV	1508			1508		3	1508		3	IIIG,V
			WEIS				1521.1	1531.3	3				IIIG
			SGMR				1522.7	1523.1	2				III
			HARV				1522	1532	2	1522	1532	2	IIIGG
			HARV				1721	1935	1	1721	1935	1	IIIS
			HARV				1956		3	1956		3	IIIB
			HARV				2028	2039	1	2028	2039	1	IIIG
			HARV				2109	2110	2	2109	2110	2	IIIG
			HARV				2117		2	2117		2	IIIB
			HARV	2126		1							IIIB
	2142	2400	MANI										
			HARV				2212		1	2212		1	IIIB
15	0000	0941	MANI							0127.7	0127.9	1	III
			MANI							0210.6	0211.8	1	III
			MANI							0232.4	0232.5	1	III
			MANI							0239.5	0239.6	1	III
			MANI							0315.1	0315.3	2	III
			MANI							0353.1	0353.3	2	III
			MANI							0402.1	0402.4	2	III
			MANI							0412.8	0413.0	1	III
			MANI							0443.4	0443.6	1	III
			MANI							0459.2	0501.5	2	IIIG
			MANI							0528.8	0530.0	2	IIIG
			MANI							0537.8	0538.3	1	IIIG
			MANI							0544.2	0545.1	2	IIIG
			MANI							0608.5	0608.7	1	III
	0651	1634	DURN	0651 E	1634 D	2	0651 E	1634 D	2				IC,DC
			MANI							0657.0	0659.2	1	IIIG
			DURN	0658.1	0658.3	1							III
			WEIS				0709.0	1559.3	3				IIIS
			DURN	0709.5	0713.2	3	0709.5	0713.2	3				IIIGG
			MANI							0710.0	0712.0	1	IIIG
	0708	1345	WEIS				0713.0	1314.5	3				IDC
			DURN	0750.6	0751.6	1	0751.2	0751.8	2				IIIG
			MANI							0751.0	0751.7	1	III
			MANI							0809.2	0809.3	1	III
			DURN	0850.3	0850.4	3	0850.3	0850.4	1				IIIG
			MANI							0854.6	0855.5	1	IIIG
			DURN	0855.6	0856.1	2	0855.6	0856.1	2				IIIG
			DURN	0921.8	0930.6	3	0921.8	0930.6	3				IIIGG
			WEIS				1041.8	1042.2	3				IIIB
			WEIS				1045.5	1046.1	3				IIIB
			WEIS				1053.2	1113.3	3				IIIGG
			DURN	1109.5	1112.3	3	1109.5	1112.3	3				IIIGG
			SGMR				1145.1	2211.0	2				CONT
			WEIS				1232.0	1232.6	2				IIIG
	1145	2211	SGMR				1232.2	1232.6	1				V
			WEIS				1257.7	1258.4	2				IIIG
			SGMR				1257.8	1258.5	2				V
			WEIS				1324.2	1324.7	2				IIIG
			SGMR				1324.3	1426.7	2				V
	1355	1605	WEIS				1356.0	1400.3	3				IIIG
	1400	2345	HARV				1400	2345	1				I
			WEIS				1403.5	1404.6	3				IIIG
			HARV				1404	1405	2				IIIG
			WEIS				1418.5	1426.4	3				IIIGG
			DURN	1424.9	1426.2	1	1424.9	1426.2	2				IIIG
			HARV	1425	1426	1	1420	1426	2				IIIGG
			HARV				1550		1	1550		1	IIIB
			WEIS				1555.0	1557.5	2				IIIG
			DURN	1555.5	1555.6	1							IIIG
			HARV	1555		1	1555	1600	3	1555	1600	3	IIIGG
			SGMR				1556.8	1557.4	3				V
			SGMR				1612.0	1612.7	2				V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			HARV	1612	1618	1	1608	1624	3	1608	1624	3	IIIGG
			HARV				1656	1709	2	1656	1709	2	IIIGG
			HARV				1721		1	1721		1	IIIB
			HARV				1738		1	1738		1	IIIB
			HARV				1751	1756	3	1751	1756	3	IIIGG,V
			HARV				1758	1822	2	1758	1822	2	IIIGG
			SGMR				1827.8	1828.7	3				V
			HARV				1828		3	1828		3	IIIG,V
			HARV				1839	1846	2	1839	1846	2	IIIG
			HARV				1931	1935	1	1931	1935	1	IIIG
			HARV				1940	1943	2	1940	1943	2	IIIG
			HARV				2004	2040	2	2004	2040	2	IIIGG
			HARV				2047	2055	2	2047	2055	2	IIIG
			HARV				2106	2115	1	2106	2115	1	IIIG
			HARV				2127	2128	2	2127	2128	2	IIIG
			HARV				2135	2144	3	2135	2144	3	IIIGG
			HARV				2204	2205	2	2204	2205	2	IIIG
			HARV				2216		1	2216		1	IIIG
			HARV	2226	2238	2	2224	2239	3	2224	2239	3	IIIGG
	2144	2400	MANI							2229.5	2229.6	1	III
			MANI							2236.4	2238.0	1	III
			HARV				2250		1	2250		1	IIIG
			HARV				2258	2300	2	2258	2300	2	IIIG
16	0000	0941	MANI							0016.5	0018.3	2	III
			MANI							0101.8	0102.0	1	III
			MANI							0133.9	0135.0	1	IIIG
			MANI							0308.7	0308.9	1	III
			MANI							0313.6	0313.9	1	III
			MANI							0335.3	0335.4	1	III
			MANI							0605.8	0618.5	1	IIIG
			MANI							0624.5	0637.4	1	IIIG
	0649	1635	DURN	0649 E	1635 D	3	0649 E	1635 D	3				IC,DC
	0655	0750	WEIS				0658.0	1621.9	3				IIIS
			DURN	0710.7	0736.7	2	0730.4	0736.7	2				IIIGG,N
			MANI							0842.1-	0842.2	1	III
			DURN	0900.6	0900.9	3	0900.6	0900.9	3				IIIG
			DURN	1015.0	1016.0	3	1015.0	1016.0	3				IIIGG
			DURN	1137.9	1138.3	2							IIIG
			SGMR				1143.0	2212.0	1				CONT
			DURN	1206.8	1213.4	3							IIIG,N
	1143	2212	SGMR				1211.0	1211.2	1				III
			SGMR				1301.9	1306.3	2				V
			DURN	1302.8	1303.5	2							IIIGG
			DURN	1305.4	1307.3	3	1305.4	1307.3	3				IIIGG
			DURN	1347.4	1347.6	2	1347.4	1347.6	2				IIIG
	1400	2345	HARV				1400	2341	2				I
			HARV				1431		1				IIIB
			HARV				1443	1444	2				IIIG
			HARV				1457		1				IIIG
	0802	1607	WEIS				1520.0	1526.8	3				III,V
			HARV				1520	1534	3	1520	1534	3	IIIGG
			SGMR				1522.0	1524.5	3				V
			DURN	1522.3	1528.8	3	1522.3	1528.8	3				IIIGG
			HARV	1542	1543	2	1540	1547	2	1540	1547	2	IIIG
			HARV				1601	1602	2	1601	1602	2	IIIG
			HARV				1614		1	1614		1	IIIG
			HARV	1630	1633	1	1626	1637	2	1626	1637	2	IIIGG
			HARV				1649	1704	2	1649	1704	2	IIIG
			HARV	1927	1929	1	1718	2114	2	1718	2114	2	IIIN
			HARV				2117	2122	3	2117	2122	3	IIIGG
			HARV				2129	2141	2	2129	2141	2	IIIGG
			HARV	2129	2136	3							IVP
	2148	2400	MANI										
			HARV	2209	2216	1							IIIN
			HARV				2213	2214	1	2213	2214	1	IIIG
			HARV	2225	2227	3	2223	2227	2	2223	2227	2	IIIGG
			HARV				2248	2300	3	2248	2300	3	IIIGG
			HARV	2306	2310	1	2305	2315	2	2310		2	IIIG
			HARV				2334	2335	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
17	0000	0941	MANI							0003.2	0003.4	1	III
			MANI							0011.9	0012.0	1	III
			MANI							0050.0	0050.6	1	III
			MANI							0134.5	0134.6	1	III
			MANI							0259.3	0303.5	1	IIIG
			MANI							0310.0	0314.9	2	IIIG
			MANI							0326.1	0326.7	1	III
			MANI							0332.6	0332.8	1	III
			MANI							0513.5	0515.0	1	IIIG
			MANI							0646.6	0647.2	1	III
	0640	1250	DURN	0650 E	1250 D	1	0650 E	1250 D	1				I,DC
			DURN	0652.7	0659.2	3	0652.7	0659.2	3				IIIGG,N
			MANI							0653.0	0653.6	1	III
	0704	1609	WEIS				0707.4	1607.3	3				IIIN
			DURN	1103.2	1103.6	3	1103.2	1103.6	3				IIIGG
			DURN	1109.6	1109.9	2	1109.6	1109.9	2				IIIGG
	1142	2213	SGMR				1248.1	1248.8	1				III
			SGMR				1258.0	2213.0	2				CONT
			SGMR				1336.0	1343.8	2				IIIG
			WEIS				1338.5	1343.3	3				IIIGG
	1400	2345	HARV				1400	2137	1				IN
			HARV				1512	1515	1				IIIG
			SGMR				1539.7	1540.5	2				III
			HARV				1540		3	1540		3	IIIG
			HARV				1557	1607	3	1557	1607	3	IIIGG
			HARV				1614	1735	1	1614	1735	1	IIIN
			SGMR				1618.5	1619.0	3				V
			HARV				1618	1619	3	1618	1619	3	IIIG,V
			HARV				1716		2	1716		2	IIIG
			HARV				1738	1751	3	1738	1751	3	IIIGG
			SGMR				1743.0	1748.0	2				V
			HARV				1755		2	1755		2	IIIB
			HARV				1801	2201	2	1801	2201	2	IIIS
			HARV				1812	1813	3	1812	1813	3	IIIGG
			HARV				2045	2051	3	2045	2051	3	IIIGG
			SGMR				2046.5	2050.2	2				IIIG
	2153	2400	MANI										
			HARV				2221		1				IIIB
18	0000	0948	MANI							0018.6	0019.0	1	III
			MANI							0207.7	0208.6	2	III
	0647	1636	DURN	0647 E	1540	1	0647 E	1540	1				I,DC
	0723	1551	WEIS				0740.0	1540.6	2				IIIN
			DURN	0936.3	0936.6	3							IIIG
			DURN	1021.3	1021.9	3	1021.3	1021.9	3				IIIG
			DURN	1148.4	1148.4	1	1148.4	1148.4	3				IIIG
	1141	2215	SGMR				1303.5	2215.0	1				CONT
			DURN	1357.9	1359.3	3							IIIGG
			DURN	1402.7	1403.5	3							IIIG
			DURN	1442.2	1442.3	3							IIIG
	1400	2345	HARV				1512		1				IIIB
			HARV	1518		2	1518		2				IIIB
			DURN	1531.4	1531.4	3	1531.4	1531.4	1				III
			HARV				1535	1541	2	1535	1541	2	IIIG
			DURN				1540.5	1540.7	3				IIIG
			HARV				1645	1658	2	1648	1650	2	II
			HARV				1710	1714	1	1710	1714	1	IIIG,W
			HARV	1729	1734	3							IIIGG
			HARV				1803		1	1803		1	IIIB
			HARV				1826	1836	1	1826	1836	1	IIIG,W
			HARV	1841	1846	2	1843	1846	3	1843	1846	3	IIIGG
			SGMR				1845.8	1846.8	2				IIIG
			HARV				1901	1903	1	1901	1903	1	IIIG,W
			HARV	1909		2	1909	1910	2				IIIG
			HARV	2004		1	2004		2				IIIG
			HARV				2046	2053	2	2050	2053	2	IIIN
			HARV				2105		2				IIIB
			HARV				2110	2118	1				IIIN
			HARV				2123		3	2123		3	IIIB
			HARV				2141		2	2141		2	IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS
FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18			HARV				2149	2150	2				IIIG
	2156	2400	MANI										
			HARV				2226	2237	2				IIIN
			HARV				2246	2253	3	2249		2	IIIN
19	0000	0943	MANI							0007.8	0010.7	1	IIIG
			MANI							0440.5	0440.7	1	III
	0650	1637	DURN	0650 E	1637 D	1	0650 E	1637 D	1				I
	0913	1401	WEIS				0938.5	1554.8	2				IIIN
	1139	2216	SGMR				1333.8	1352.8	2				IIIG
	1429	1612	WEIS										
			SGMR				1554.0	1554.7	2				V
	1400	2345	HARV				1554		3	1554		3	IIIG
			HARV				1635	1638	1				IIIG,W
			SGMR				1910.8	2010.0	1				IIIS
			HARV				1911		1				IIIG
			HARV				1926		2	1926		2	IIIG
			HARV				1941		3	1941		3	IIIB
			HARV				2043		1	2043		1	IIIB
			HARV				2054	2055	2	2054	2055	2	IIIG
	2148	2400	MANI										
20	0000	0945	MANI							0007.4	0008.0	1	III
	0648	1638	DURN	0648 D	1638 E	1	0648 D	1638 E	1				IS
			DURN	0740.8	0740.9	1	0740.8	0740.9	2				IIIG
	0659	1254	WEIS				0747.8	1502.3	2				IIIN
			DURN	0751.0	0751.2	3	0751.0	0751.2	3				IIIG
			DURN	0813.4	0813.5	1	0813.4	0813.5	1				IIIG
	1138	2217	SGMR				1242.8	1243.4	2				V
			SGMR				1359.5	1400.0	1				V
	1345	2345	HARV				1400		1				IIIB
	1450	1604	WEIS										
			SGMR				1454.3	1454.6	1				V
			HARV				1454		1	1454		1	IIIG
			SGMR				1519.4	1519.9	1				V
			SGMR				1524.8	1525.9	1				V
			HARV				1601	1602	2	1602		2	IIIG
			HARV				1657	1700	2	1657	1700	2	IIIGG
			SGMR				1658.5	2217.0	1				CONT
			HARV				1708	1709	2	1708	1709	2	IIIG
			HARV				1715		2	1715		2	IIIB
			HARV				1805	1810	2	1805	1810	2	IIIG
			HARV				1845	1851	2	1845	1851	2	IIIG
			HARV				1925	1929	1	1925	1929	1	IIIG
			HARV				2006		1				IIIB
			HARV				2131		1				IIIB
			HARV				2147		1				IIIB
	2153	2400	MANI										
			HARV				2344		1				IIIG
21	0000	0944	MANI							0047.6-	0047.8	1	III
	0647	1639	DURN	0806.2	0806.2	2	0806.2	0806.2	2				III
	0657	1147	WEIS				1011.4	1436.6	1				IIIN
	1208	1616	WEIS										
	1136	2218	SGMR				1815.7	1821.3	1				IIIG
	1345	2345	HARV				1816		2	1816		2	IIIB
			HARV				1821	1822	3	1821	1822	3	IIIG
			HARV				1944	1946	3	1944	1946	3	IIIG
			SGMR				1945.2	2103.0	2				IIIS
			HARV				2129		2	2129		2	IIIG
			HARV				2135		1	2135		1	IIIB
	2141	2400	MANI										
			HARV				2200		1				IIIB
22	0000	0939	MANI										
	0654	1617	WEIS				0831.0	1602.3	1				IIIN
	0646	1640	DURN	1206.5	1206.9	2							IIIG
	1135	2220	SGMR				1339.4	1339.6	2				III
			SGMR				1352.2	1352.4	1				III
			SGMR				1601.6	1601.9	1				III

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22	1345	2345	HARV				1602		1	1602		1	IIIG
			HARV				1626		1	1626		1	IIIB
			SGMR				2118.9	2127.3	2				IIIG
	2150	2400	MANI										
			HARV				2153		3	2153		3	IIIG
			HARV				2254	2258	1	2254	2258	1	IIIG
			HARV				2305		1				IIIB
23	0000	0938	MANI										
	0643	1641	DURN										
	0653	1425	WEIS										
	1133	2221	SGMR										
	1345	2340	HARV										
	1610	1619	WEIS										
	2134	2400	MANI										
24	0000	0938	MANI							0056.9	0103.5	1	IIIG
			MANI							0426.8	0427.0	1	III
	0642	1642	DURN	0735.2	0740.4	3	0735.2	0740.4	3				IIIGG,RS,U
	0650	1621	WEIS				0735.7	0737.7	3				IIIG
			DURN	0855.6	0855.6	1	0855.6	0855.6	1				III
			WEIS				0930.4	0930.9	1				IIIG
			WEIS				1005.0	1433.0	1				IN
			DURN	1125.7	1125.7	3							III,RS
			DURN	1128.1	1128.1	1							III
	1131	2222	SGMR										
			DURN	1150.7	1150.7	2							III,RS
	1345	2345	HARV				1356	1408	1				I
			HARV	1644		2							IIIG
			HARV	2004	2005	1							IIIG
			HARV	2024	2027	1							IIIG
	2150	2400	MANI										
25	0000	0928	MANI										
	0639	1643	DURN	0808.3	0810.0	3	0808.3	0810.0	3				III,GG
			WEIS				0809.8	0835.0	3				II
			DURN	0810.3	0813.0	3	0810.3	0814.2	3				II
	0648	1622	WEIS				0828.3	0835.0	2				IIIG
	1130	2224	SGMR										
			DURN	1159.0	1159.1	2							IIIG
			WEIS				1449.0	1451.0	2				IIIGRS
			DURN	1449.1	1451.3	3	1449.1	1451.3	3				IIIGG,U,DC
	1345	2345	HARV	1449	1451	3	1450		2				IIIG
			DURN	1451.5	1456.2	3	1451.5	1456.2	3				II
			WEIS				1451.6	1524.0	3				II
			HARV	1452	1454	3	1452	1521	3				II
			DURN	1501.0	1512.0	1	1501.0	1512.0	2				IV
	2152	2400	MANI										
26	0000	0006	MANI										
	0043	0651	MANI										
	0647	0655	WEIS				0652.7	0655.0	1				II
	0709	0941	MANI										
	0727	1619	WEIS				0746.3	0747.0	3				IIIG
	0637	1644	DURN	0746.4	0746.9	3	0746.4	0746.9	3				IIIGG
			WEIS				0749.0	0750.4	2				IIIG
			DURN	0749.7	0751.6	2	0749.7	0751.6	2				IIIGG
			DURN	0820.9	0820.9	2							III,RS
			DURN	0953.3	0954.6	2	0953.3	0954.6	2				IIIG
			WEIS				0953.3	0955.2	2				IIIG
			WEIS				1002.4	1002.6	1				IIIB
			WEIS				1005.7	1006.6	2				IIIG
			DURN	1005.9	1006.7	3	1005.9	1006.7	3				IIIG,RS
			WEIS				1035.1	1036.2	3				IIIG
	1128	2225	SGMR										
			DURN	1135.2	1136.3	3	1135.2	1136.3	3				IIIGG,U,RS
			WEIS				1249.5	1259.0	2				IIIG
			DURN				1256.0	1256.3	1				IIIG
			WEIS				1410.5	1415.3	3				IIIG
			DURN	1410.6	1414.9	1	1410.6	1415.3	3				IIIGG,RS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS
FEBRUARY 1978

FEB 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26	1345	2345	HARV	1415		2	1412	1415	2				IIIG
			WEIS				1445.1	1445.2	2				IIIB
			HARV				1445		2				IIIB
			DURN	1621.8	1621.8	3	1621.8	1621.8	3				III
			HARV				1622		2				IIIB
	2134	2400	MANI							2227.3-	2228.3	1	III
			HARV	2327	2328	2							IIIG
27	0000	0942	MANI										
	0636	1645	DURN										
	0645	1031	WEIS				0659.4	0659.6	2				IIIG
			WEIS				0713.8	0714.5	2				IIIG
			WEIS				0804.5	0817.0	1				II
			WEIS				0845.8	0848.3	1				IIIGRS
			WEIS				0942.5	0942.8	1				IIIG
	1127	2226	SGMR				1127.1	2130.0	1				CONT
	1600	1625	WEIS										
	1345	2345	HARV				1837	1838	1				IIIG
			HARV				1912	1913	1	1912	1913	1	IIIG
	2134	2400	MANI										
28	0000	0941	MANI										
	0635	1646	DURN										
	0643	1250	WEIS										
	1125	2227	SGMR										
	1304	1627	WEIS										
	1345	2345	HARV										
	2138	2400	MANI										

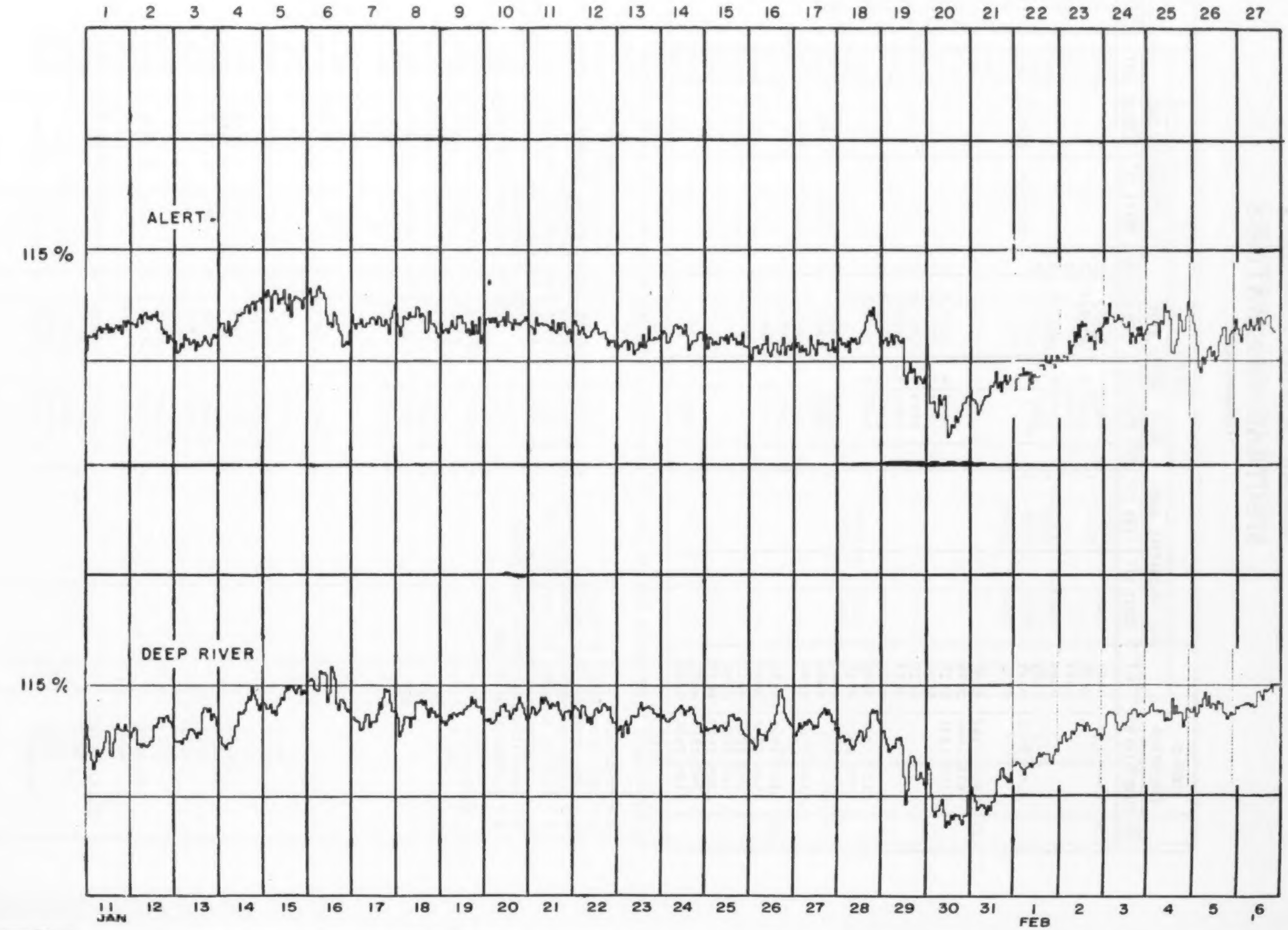
The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

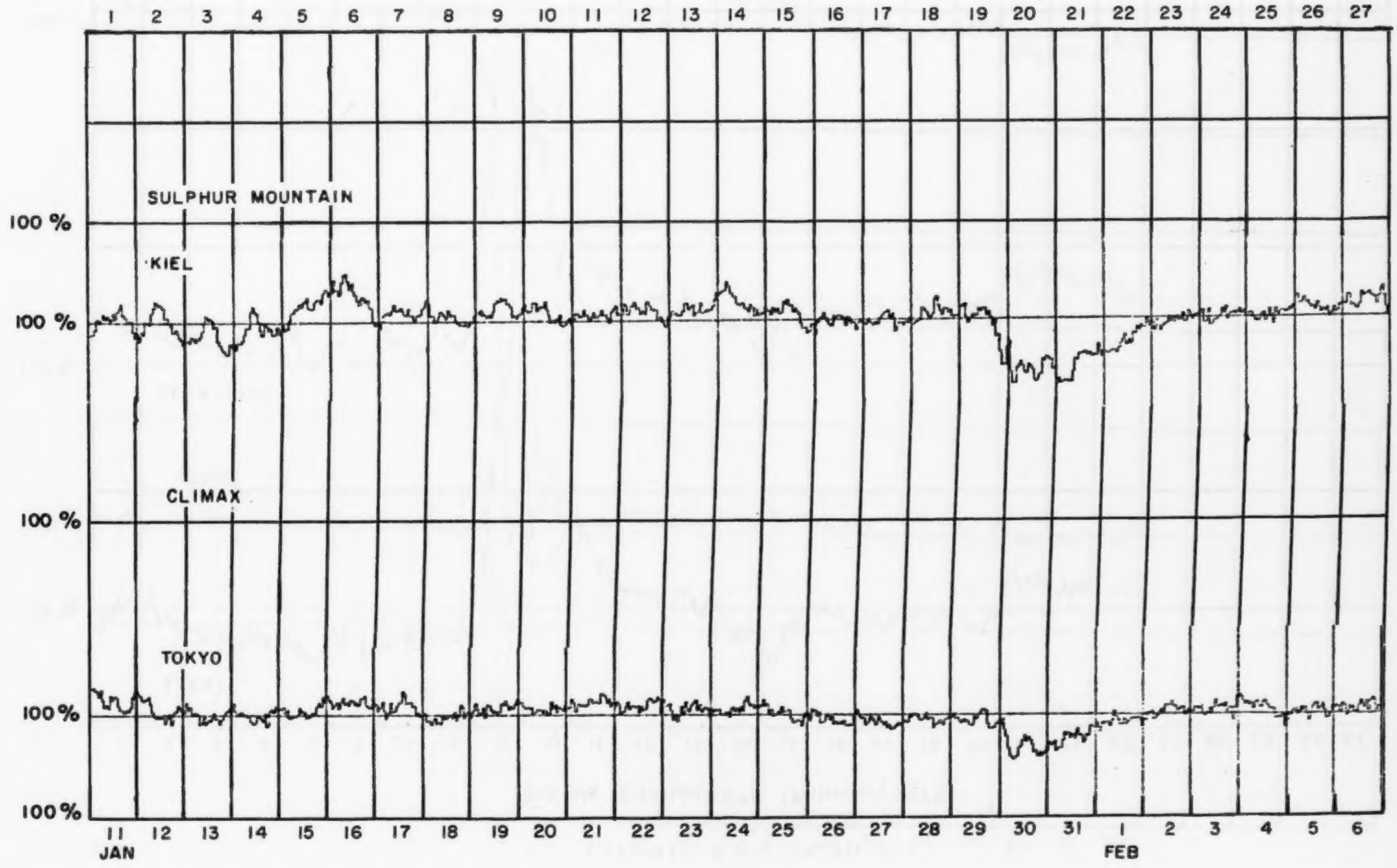
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1975 (January - February 1978)



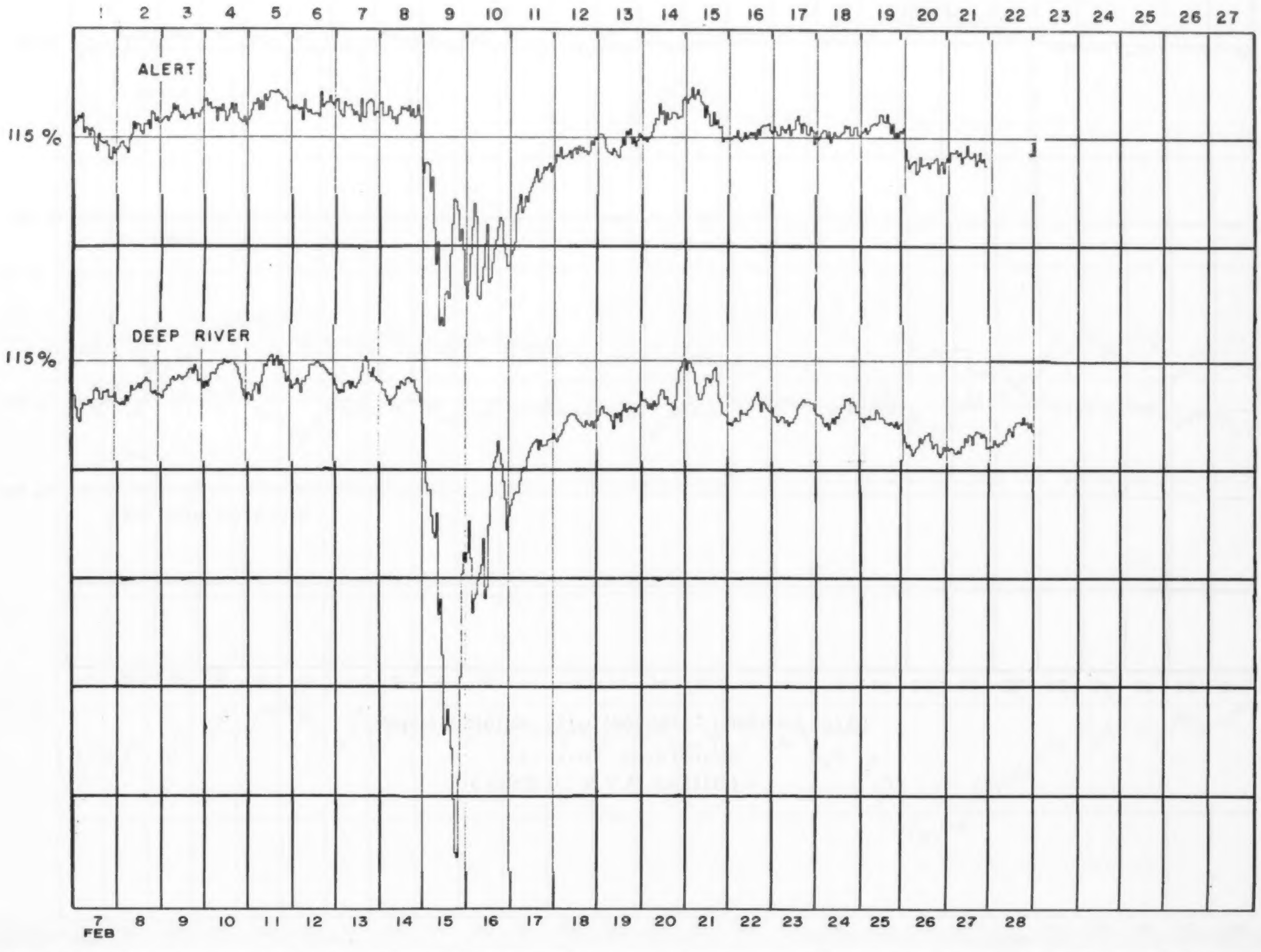
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1975 (January - February 1978)



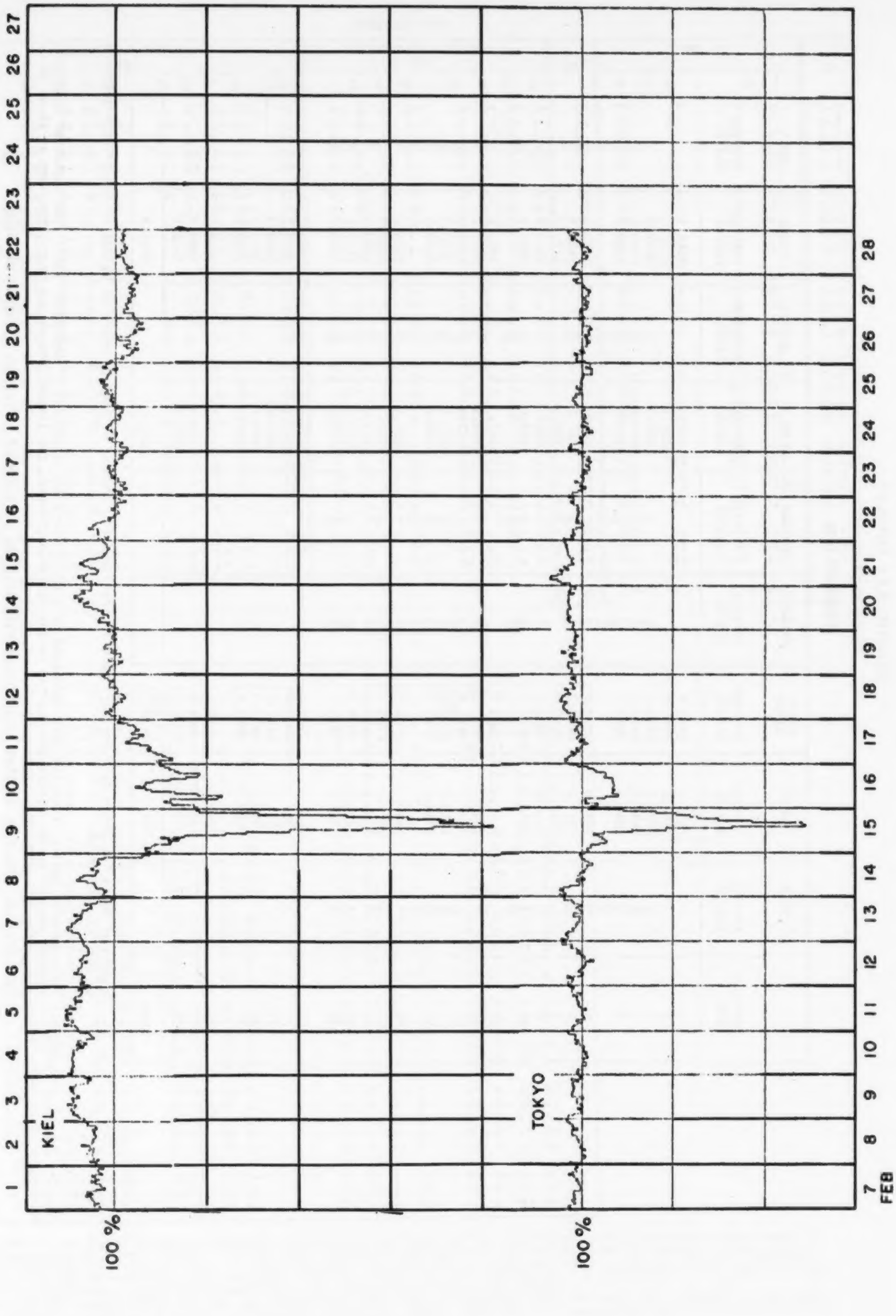
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1976 (February 1978)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1976 (February 1978)



COSMIC RAY INDICES
(Neutron Monitors)
FEBRUARY 1978

February 1978	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr	KULA Average cts/hr
1	Data not available at time of publication.	7315.3	6860.9	Data not available at time of publication.	Data not available at time of publication.	6226.3	Data not available at time of publication.	3616.2	Data not available at time of publication.
2		7407.4	6941.4			6284.4		3636.1	
3		7454.2	6979.0			6300.3		3639.8	
4		7455.5	6997.2			6302.1		3640.8	
5		7398.0	7012.4			6325.0		3634.5	
6		7454.0	7033.0			6346.5		3642.4	
7		7351.2	6968.0			6285.7		3625.5	
8		7364.5	6988.8			6298.4		3622.0	
9		7416.0	7022.1			6350.7		3624.4	
10		7425.3	7043.3			6350.0		3615.9	
11		7456.4	7035.9			6361.3		3621.2	
12		7436.8	7037.2			6330.8		3621.1	
13		7432.7	7021.8			6332.4		3629.3	
14		7419.5	6995.7			6273.6		3620.2	
15		7036.0	6321.8			5702.8		3478.0	
16		6986.7	6596.5			6024.7		3574.4	
17		7176.0	6786.5			6131.2		3622.8	
18		7304.0	6895.4			6227.0		3638.2	
19		7329.6	6929.3			6233.4		3631.1	
20		7399.2	6976.1			6295.1		3636.3	
21		7419.1	7008.8			6293.4		3646.1	
22		7358.8	6932.9			6247.9		3625.5	
23		7371.3	6929.2			6218.9		3610.3	
24		7360.2	6927.3			6223.6		3612.2	
25		7380.6	6907.8			6250.1		3613.1	
26		7267.6	6838.0			6178.4		3608.5	
27		7289.7(21)	6844.8			6174.3		3609.9	
28		7305.5(4)	6874.0			6197.0		3618.5	
MEAN		7349.0	6918.0			6241.6		3618.4	

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Notes: Tokyo neutron monitor counting rate increased by 2.0/1.5 since the beginning of September 1977. The number of counters changed from 27 to 36. Since the scaling factor has been changed, the listed figures are nearly the same as those in and before May 1977. The level in June, July, and August, 1977 is slightly lower than before. The level in September 1977 has been adjusted, so that direct comparison with the data in and before May, 1977 is possible.

Thule, Alert, Calgary, Sulphur Mountain, Kiel, Climax and Kula Scaling Factors = 100. Deep River Scaling Factor = 300. Tokyo Scaling Factor = 256.

Kula data are available on magnetic tape from the World Data Center A for Solar-Terrestrial Physics. These data include the periods July 1967-December 1970 and October 1975 to the present.

GEOMAGNETIC ACTIVITY INDICES

FEBRUARY 1978

Day		Three-Hourly Indices Kp 1	2	3	4	5	6	7	8	Sum	Three-Hourly Indices Km 1	2	3	4	5	6	7	8	Ap	aa * N	S	M			Cp
1		4	3+	2+	2	3	3	2+	4-	24-	4-	3-	2	2-	3+	3+	2+	3+	15	27	22	19	30		0.9
2		4-	3+	2+	3+	2+	1	2-	4-	21+	3+	3-	2+	3	2	1+	2-	3	14	22	23	29	17		0.8
3		3+	2+	2+	3	3	3	3	3	23	3-	2	2+	3	3	3+	3-	3-	14	26	31	22	35		0.8
4	Q9A	4	3-	3-	2	2-	2+	2-	2-	19-	3	2	2	2	2-	2	1+	1+	11	16	14	18	12		0.6
5		3+	4-	4-	3	3-	3+	4-	2-	25	3-	3	3+	3	3	3+	4-	2	17	30	33	29	35		0.9
6		3-	2-	3-	3-	3+	3	4-	3-	22+	2	1+	3-	2+	3+	3+	4-	3-	14	23	31	16	39		0.8
7	Q4A	2+	2	1	1+	1	2	2+	2+	14+	3-	2-	1	2-	1	2	2+	3-	7	10	13	10	13	C	0.3
8	Q0A	3-	2	2	2-	3	3	3-	2+	19+	2+	1+	2+	2-	3	2+	3-	2+	10	22	15	13	24		0.6
9		2-	2-	3	3	4+	3	3+	3+	23+	2-	1	3-	3	4	3	3+	3+	16	27	24	17	34		0.9
10	Q5A	2+	2+	2	2-	2	2	2+	1+	16	2-	2+	2	2-	2-	2+	3-	1+	7	13	17	17	14		0.4
11	Q2	2	1+	2+	2+	0+	1+	0+	1-	11-	1+	1+	2-	2+	1-	2-	1-	1-	5	8	10	13	5	CC	0.2
12	Q8A	1	2-	3-	1-	1+	2+	3-	4+	17-	2-	2	2+	0+	1	2	2+	4-	10	22	18	13	28		0.6
13	Q6A	3	3	2	2-	1-	2+	2	1	16-	3-	2+	2-	2-	0+	2	2	1	8	16	13	20	10		0.4
14		2+	1	1	3	3-	2+	1+	4+	18	2-	1	1-	3-	3-	2+	2-	5-	11	17	15	12	21		0.6
15	D3	4	5+	7-	7+	4-	2+	1+	1	32-	4-	5-	6-	7	3+	2	2-	1	48	58	85	128	15		1.6
16		2-	2-	2-	3+	3	2	3	3+	20-	2-	1+	2	3	3+	2	3-	3-	11	24	25	16	33		0.7
17	Q7A	4+	3	1-	1-	2-	1+	2	2	16-	4-	3-	1-	0+	1+	2-	2-	2-	10	17	7	13	11	K	0.5
18		3-	3-	3-	2	3-	2	3-	2+	20-	2+	2	2	2-	2+	2+	3-	2+	10	20	14	14	21		0.6
19		3	4-	2-	1+	2+	2	2	4-	20-	2+	3	1+	2-	3-	2-	1+	3+	12	20	20	18	23		0.7
20		4-	3-	3+	2	3-	2	2+	3-	21+	3	2	3	2	3-	2	2+	3-	12	22	19	20	22		0.7
21		2-	2+	1	2+	2+	4+	3	3	20	2-	2	1	2	3-	4	3	3	12	22	22	10	34		0.7
22	D5	4	4+	4-	2-	2+	4	3	5-	28-	3	3	3	2-	2+	5-	3	4	22	41	28	28	42		1.1
23	Q3	3-	1+	2	1+	2-	1-	1	2	13-	2+	1+	1+	1+	2-	1-	1	2-	6	11	13	13	11	C	0.3
24	Q1	2	1-	1+	2	2-	1+	1-	0+	10	2-	1-	1+	2-	2	2-	1-	0	5	6	9	8	7	CC	0.2
25		1-	2-	1+	2	1	1-	4	5-	16	1	1+	2-	2	2-	1-	4-	4	12	25	24	11	38		0.7
26	D4	5	5-	3+	4-	5-	5	5	4+	36-	5-	4-	3-	3+	5-	4	5-	4-	37	62	46	46	62		1.4
27	D2	4+	4+	3+	4-	6-	5+	5+	5+	37+	4-	3+	3	3	5+	5	5-	5-	42	62	63	33	92		1.5
28	D1	4-	5+	4+	3+	4	5+	6+	6-	38	3+	5-	3+	3+	4-	4+	5+	5	46	66	64	40	89		1.5
																			16	26.3	25.7	26.1			0.75

Day	Three-Hourly Indices Kn 1	2	3	4	5	6	7	8	Three-Hourly Indices Ks 1	2	3	4	5	6	7	8
1	3+	3-	2-	2-	3	3+	3-	4-	4	3-	2+	2	3+	3+	2+	3+
2	3	3-	3-	3+	2	1	2-	3	3+	3-	2	3	2-	1+	2-	3
3	3-	2	2+	3-	3	3+	3	2+	3	2-	2	3+	3	3+	3-	3-
4	3	2	2	2	2-	2	2-	1+	3	2	2-	2	2	2-	1+	1+
5	3	3	3+	3	3	3+	4-	2-	3-	3	3+	3+	3+	3	4	2+
6	2	1	3-	2	3	3+	3	2	2	1+	2+	2+	4-	3+	4-	3+
7	2	1+	1-	2-	1	2-	2	3-	3	2	1	2-	1+	2	3-	3-
8	2	1+	2	1+	3	2+	3-	3-	2+	1+	3-	2	3	2+	2+	2+
9	2-	1	3+	3+	4	3	3+	3+	2	1	2+	3-	4+	3+	3+	3+
10	2	2	2-	1+	2-	2	3-	1+	2-	2+	2+	2	2-	3-	3-	1+
11	1+	1+	2	3-	0+	2-	0+	0+	1+	2-	1+	2	1+	2	1-	1
12	1+	2-	2+	0	1	2	2+	4-	2-	2+	2+	1-	1	2	3-	4-
13	2+	2+	2-	2-	0+	2+	2	1	3-	2+	2	2-	1-	2	2+	1+
14	2-	1	1	3-	2+	3-	2-	4	2-	1+	1-	3-	3-	2	2-	5
15	3+	4+	6-	7	3+	2	1+	1	4	5	6-	7	3	2	2-	1
16	2-	1+	2	3	3	2-	3	3	2-	1+	2	3	4-	3-	3-	3-
17	4-	2	1-	0	1+	1+	2	2	4-	3	1-	0+	1+	2-	2-	2-
18	2	2	2	2-	2+	2+	3-	2	3-	2-	2	2-	3-	3-	3	2+
19	2+	3+	1+	2-	3-	2-	2-	3	3-	3	1+	2-	3-	2-	1+	4-
20	3	2	3	2+	3	2	2	2+	3	2-	3-	2	3-	2+	2+	3-
21	1+	2	1	2	2+	4	3-	3	2	2	1	2	3-	4	3	3-
22	3	3	3	1+	2	5-	3	4	3-	3	3	2	2+	4+	3+	4+
23	2	1+	1+	1	2-	1-	1	2-	3	2-	1+	2-	1+	1-	1+	2
24	2-	0+	1+	2-	2-	2-	1-	0	1+	1	1	2	2	2-	1-	0+
25	0+	1	2-	2	2-	1	4-	4-	1+	2	1+	2	2-	1-	4-	4+
26	4+	4-	3-	3+	4+	4	4+	4-	5	4-	3	3+	5-	4-	5-	4
27	4	3+	3	3+	5+	5-	5-	5-	4-	3+	3	3-	5	5	5	5
28	4-	5-	3+	3	4-	5-	5+	5	3+	5-	3+	3+	4	4	5+	5-

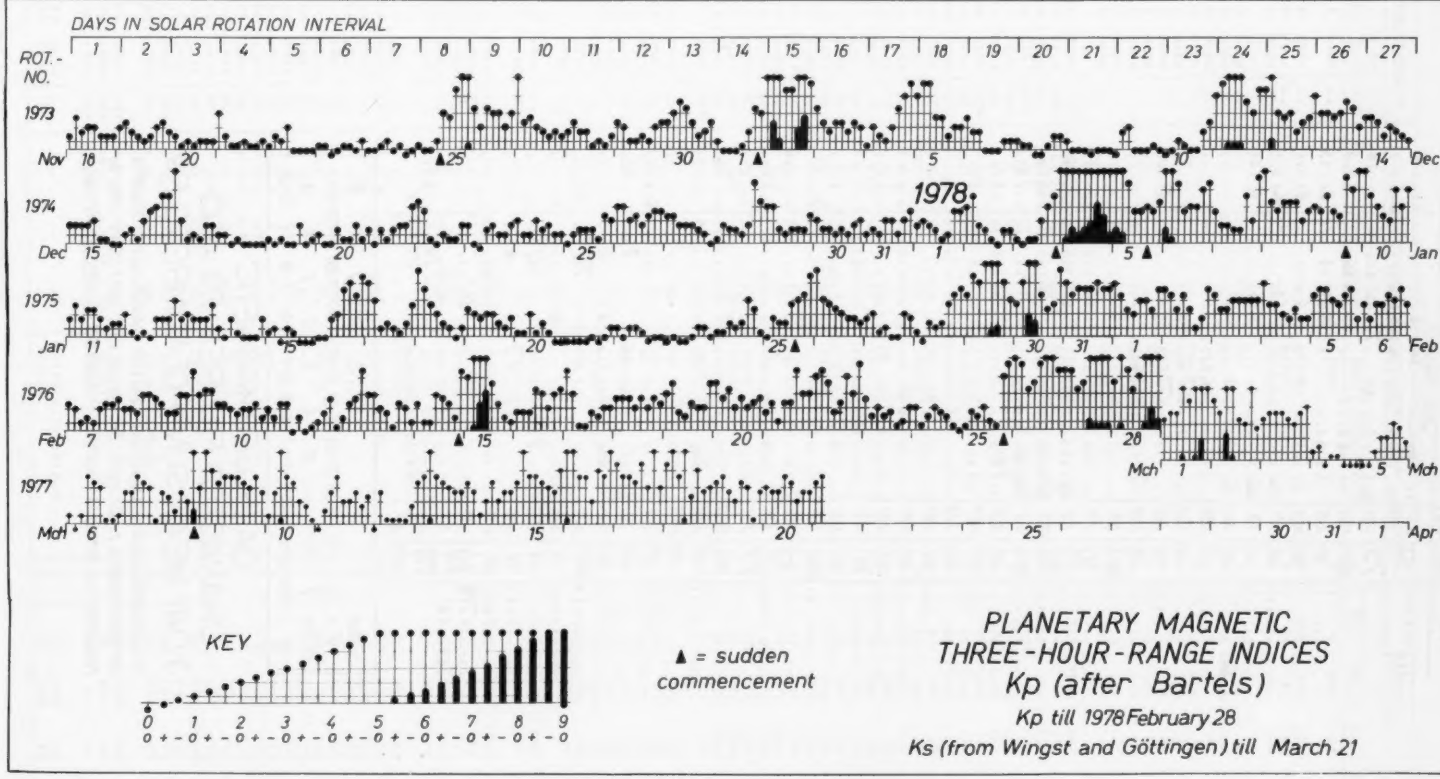
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap ≤6 but one Kp ≥3o or two Kp values ≥3-"). An * means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES Ap

	1977										1978	
DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
1	11	4	13	9	15	6	4	4	5	6	7	15
2	5	5	66	14	11	4	6	5	6	69	8	14
3	4	12	15	6	9	7	8	10	4	9	13	14
4	3	24	19	5	8	9	6	7	8	14	89	11
5	4	12	11	7	5	40	3	8	10	18	31	17
6	6	49	10	5	28	21	4	8	7	5	34	14
7	5	48	6	6	15	17	6	3	5	3	13	7
8	12	27	3	6	14	12	8	6	3	2	19	10
9	38	22	7	6	16	20	11	2	3	3	23	16
10	19	13	9	8	14	12	13	4	9	4	21	7
11	18	14	24	4	10	28	19	12	6	38	7	5
12	22	8	19	4	4	11	6	28	18	21	4	10
13	13	5	6	6	9	11	28	14	26	16	8	8
14	12	12	8	9	18	12	10	13	42	8	3	11
15	5	10	14	3	12	11	9	19	25	5	2	48
16	6	17	22	10	27	9	7	8	14	9	14	11
17	9	9	18	8	14	29	10	12	8	12	9	10
18	11	8	11	10	7	13	6	22	6	3	12	10
19	5	48	5	10	23	24	42	28	6	3	6	12
20	13	28	10	11	29	8	44	7	4	4	3	12
21	10	12	4	6	10	5	64	5	5	6	1	12
22	7	6	7	10	11	5	63	22	3	6	3	22
23	14	5	7	10	6	6	21	6	2	4	2	6
24	12	11	8	7	7	10	12	6	2	5	6	5
25	12	22	5	5	5	27	10	4	15	5	12	12
26	16	4	2	6	3	13	18	6	19	11	12	37
27	8	4	4	7	3	14	24	62	12	6	5	42
28	15	4	7	12	4	7	9	47	5	10	9	46
29	14	18	2	7	61	6	3	9	6	8	36	
30	5	8	5	9	17	5	4	9	12	5	36	
31	4		7		8	4		6		6	23	
MEAN	11	16	11	8	14	13	16	13	10	10	15	16

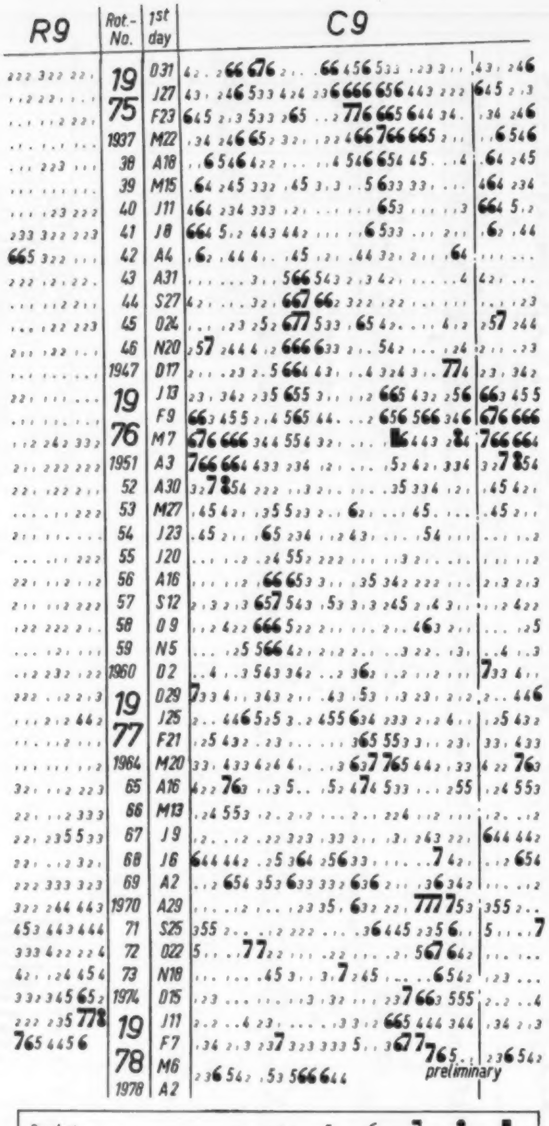
GEOMAGNETIC ACTIVITY INDICES



PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp (after Bartels)

Kp till 1978 February 28

Ks (from Wingst and Göttingen) till March 21



Symbol	.	,	2	3	4	5	6	7	8	9
$\bar{R}$ =	0	1-15	16-30	31-45	46-60	61-80	81-100	101-130	131-170	171...
R9,C9 =	0	1	2	3	4	5	6	7	8	9
Cp =	0.0-0.1	0.2-0.3	0.4-0.5	0.6-0.7	0.8-0.9	1.0-1.1	1.2-1.4	1.5-1.8	1.9	2.0-2.5

DAILY GEOMAGNETIC CHARACTER FIGURES C9 AND 3-DAY MEAN SUNSPOT NUMBERS R9

For explanation and previous years see J. Bartels, Abhandlungen der Akademie der Wissenschaften zu Göttingen, Beiträge zum I.G.J., Heft 3 (1958) (may be requested from Institut für Geophysik, Postfach 876, 34 Göttingen, Germany).

PRINCIPAL MAGNETIC STORMS

FEBRUARY 1978

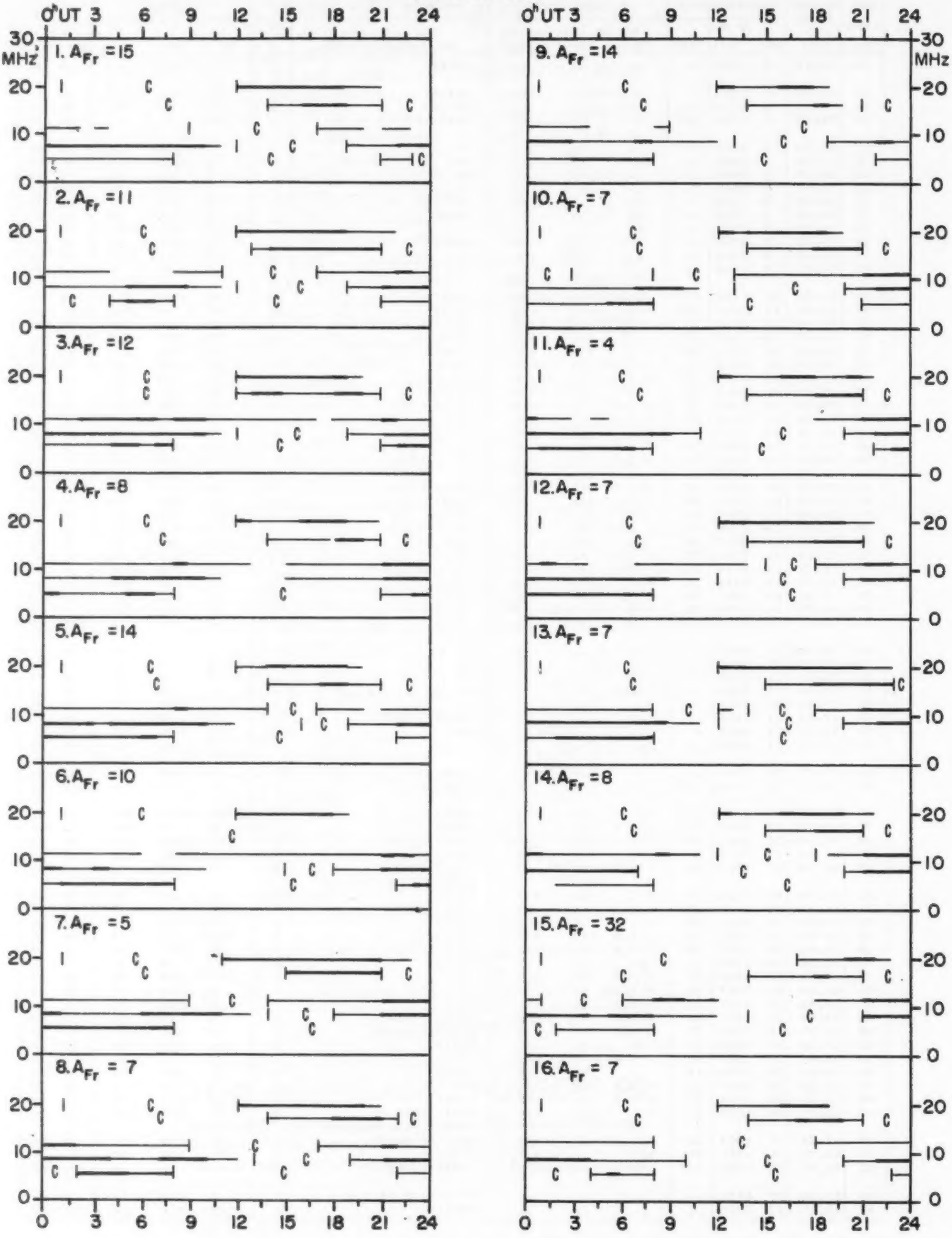
OBS. 2 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	COMMENCEMENT hr min (UT)	COMMENCEMENT TYPE	SC - AMPLITUDES D(')	SC - AMPLITUDES H(γ)	SC - AMPLITUDES Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY (3 HOUR PERIOD)	MAXIMUM 3 HOUR - INDEX K K	RANGES D(')	RANGES H(γ)	RANGES Z(γ)	UT END DAY	UT END HOUR
HU	00.6S	3	1150	••	••	••	••	03(6)	5	5	204	47	03	24
CO	64.6N	5	03--	••	••	••	••	05(4)	6	130	970	460	05	21
NE	55.1N	5	01--	••	••	••	••	05(3)	5	20	84	97	05	22
KG	56.5S	5	0727	SC*	--	--	--	05(5,6)	4	--	--	--	05	21
GM	24.5N	9	0400	••	••	••	••	--	-	3	154	34	09	22
JP	17.3N	9	0400	••	••	••	••	--	-	3	138	25	09	22
SH	14.6N	9	0400	••	••	••	••	--	-	3	143	27	09	22
UJ	13.5N	9	0400	••	••	••	••	--	-	3	134	21	09	22
AL	09.5N	9	0400	••	••	••	••	--	-	2	140	21	09	22
HD	07.6N	9	0500	••	••	••	••	09(5)	5	3	175	25	10	22
AN	01.5N	9	0400	••	••	••	••	--	-	3	196	69	09	22
HU	00.6S	9	1058	••	••	••	••	09(5,6)	5	11	315	44	09	23
TV	01.1S	9	0400	••	••	••	••	--	-	3	221	101	09	22
KG	56.5S	9	0900	••	••	••	••	09(5)	5	--	--	--	10	01
CO	64.6N	14	2146	SC*	--	--	--	15(4)	9	310	3090	830	15	19
SI	60.0N	14	2147	SC*	+13 *	-33 *	-27 *	15(4)	8	--	--	770	15	20
NE	55.1N	14	2146	SC	5	44	--	15(4)	9	47	740	742	15	21
WI	54.2N	14	2147	SC*	- 5	+72	+ 3	15(3,4)	6	20	235	45	15	14
FR	49.6N	14	2147	SC*	+ 4	+55	-11	15(4)	7	40	151	125	15	15
BD	48.9N	14	2148	SC	- 1	+31	- 8	15(3)	6	26	150	145	15	16
IR	41.0N	14	2145	SC*	- 7.6	36	6	15(3)	7	28	238	86	15	21
TU	40.4N	14	2145	SC	- 2	+45	+ 3	15(3,4)	7	14	165	35	15	17
SJ	29.9N	14	2145	SC	+ 1.5	+31	+ 7	15(4)	6	16	96	22	15	19
GM	24.5N	14	2145	SC	- 2.1	41	- 4	--	-	10	--	29	16	03
HO	21.1N	14	2147	SC	02	13	06	15(4)	7	10	33	09	17	09
JP	17.3N	14	2145	SC	- 1.9	42	-11	--	-	10	271	28	16	03
SH	14.6N	14	2145	SC	- 1.3	32	7	--	-	6	318	22	16	03
UJ	13.5N	14	2145	SC	- 1.3	49	-12	--	-	8	294	26	16	03
AL	09.5N	14	2145	SC	- 1.5	41	-14	15(4)	7	10	267	37	16	03
HD	07.6N	14	2145	SC	- 1.0	+41	- 3	15(4)	8	8	308	28	16	14
GU	04.0N	14	2147	SC	-01	38	-09	15(3)	7	--	300	30	15	16
AN	01.5N	14	2145	SC	- 2.2	52	20	--	-	9	312	121	16	03
HU	00.6S	14	2147	SC	3	100	12	15(4,5)	6	13	338	41	15	20
TV	01.1S	14	2145	SC	- 0.8	41	53	--	-	5	333	194	16	03
PM	18.7S	14	2145	SC	- 2.8	+36	+24	15(3,4)	6	9	290	130	15	19
HR	33.7S	14	2148	SC	+ 5	+55	+41	15(4)	6	23	198	152	15	15
GN	43.3S	14	2147	SC	+ 3.9	+24	+17	15(3)	7	10	190	240	15	19
TO	46.7S	14	2145	SC	- 6	+ 8.0	0	15(2)	6	37	285	119	15	15
KG	56.5S	14	2147	SC*	--	--	--	15(4)	8	--	--	--	15	18
GM	24.5N	21	0800	••	••	••	••	--	-	7	82	42	22	23
JP	17.3N	21	0800	••	••	••	••	--	-	6	79	22	22	23
SH	14.6N	21	0800	••	••	••	••	--	-	4	72	18	22	23
UJ	13.5N	21	0800	••	••	••	••	--	-	5	88	24	22	23
AL	09.5N	21	0800	••	••	••	••	--	-	4	91	27	22	23
HD	07.6N	21	0800	••	••	••	••	21(6) 22(6)	5	4	99	16	23	04
AN	01.5N	21	0800	••	••	••	••	--	-	3	96	39	22	23
TV	01.1S	21	0800	••	••	••	••	--	-	3	124	90	22	23
HR	33.7S	22	15--	••	••	••	••	22(6,8)	5	13	83	42	23	01
KG	56.5S	22	1506	SC*	--	--	--	22(6,8)	5	--	--	--	23	02
CO	64.6N	25	1926	SC*	-14	+31	-16	27(5,6) 01(4)	7	326	1830	1390	03	23
SI	60.0N	25	1929	SC*	+11 *	-53 *	- 7 *	27(5)	7	80	--	560	03	13
NE	55.1N	25	1927	SC*	2	18	--	27(5) 28(2)	6	57	195	219	04	01
WI	54.2N	25	1929	SC	- 3	+61	+ 3	28(7)	7	46	200	80	28	23
FR	49.6N	25	1928	SC	+ 1	+20	- 3	26(1) 27(5,6,8)	5	23	167	70	03	03
								28(2,6,7,8) 01(5,8)						
BD	48.9N	25	1928	SC	- 1	+10	- 3	27(5)	6	31	170	62	03	08
IR	41.0N	25	0927	SC*	- 1.8	75	12	27(5) 28(7)	6	30	201	38	01	03
TU	40.4N	25	1927	SC	- 1	+35	+ 2	26(1)	6	18	155	40	03	14
SJ	29.9N	25	1927	SC	- 0.5	+27	+ 7	26(1)	6	8	141	33	28	05
GM	24.5N	25	1927	SC	- 0.8	54	- 3	--	-	8	163	46	28	23
HO	21.1N	25	1927	SC	04	12	04	26(1)	6	03	38	06	--	--
JP	17.3N	25	1927	SC	- 1.5	47	-10	--	-	7	138	37	28	23
SH	14.6N	25	1927	SC	- 0.2	40	7	--	-	6	146	30	28	23
UJ	13.5N	25	1927	SC	- 0.7	54	-11	--	-	6	149	29	28	23
AL	09.5N	25	1927	SC	- 1.2	42	- 8	26(1,5,6)	5	6	140	30	28	23
HD	07.6N	25	1927	SC	- 0.5	+45	- 2	25(7) 26(5,6)	5	2	133	20	26	22
GU	04.0N	25	1928	SC	--	31	-09	26(1)	6	--	170	40	01	18
AN	01.5N	25	1927	SC	- 2.0	50	26	--	-	4	171	95	28	23
HU	00.6S	25	1938	SC	3	173	11	26(5)	6	12	287	38	26	22
TV	01.1S	25	1927	SC	- 0.1	41	53	--	-	3	206	101	28	23
PM	18.7S	25	1925	SC*	+ 0.9	+35 *	+32 *	26(1)	6	10	140	70	02	00
HR	33.7S	25	1928	SC	+ 2	+27	+16	25(8) 26(5,7)	5	37	127	122	28	24
								27(5,6,7,8) 28(6,7)						
GN	43.3S	25	1927	SC*	+ 5.0*	+35 *	+30 *	26(1,5) 28(7)	6	20	130	130	01	06
TO	46.7S	25	1925	SC*	+41	+ 4.7*	- 7.8	27(5)	6	21	177	49	01	00
KG	56.5S	25	1928	SC*	--	--	--	25(8) 26(1)	5	--	--	--	26	12
HD	07.6N	27	0130	••	••	••	••	27(5,6,7) 28(7,8)	5	5	139	17	28	23
HU	00.6S	27	1120	••	••	••	••	27(6)	6	12	308	72	28	23

Reports were received from the following observatories:

Alibag Annamalainagar Boulder College Fredericksburg Gnangara Guam Gulmarg Hermanus Honolulu Huancayo Hyderabad Irkutsk Jaipur Kerguelen Newport Port Moresby San Juan Shillong Sitka Toolangi Trivandrum Tucson Ujjain Witteveen

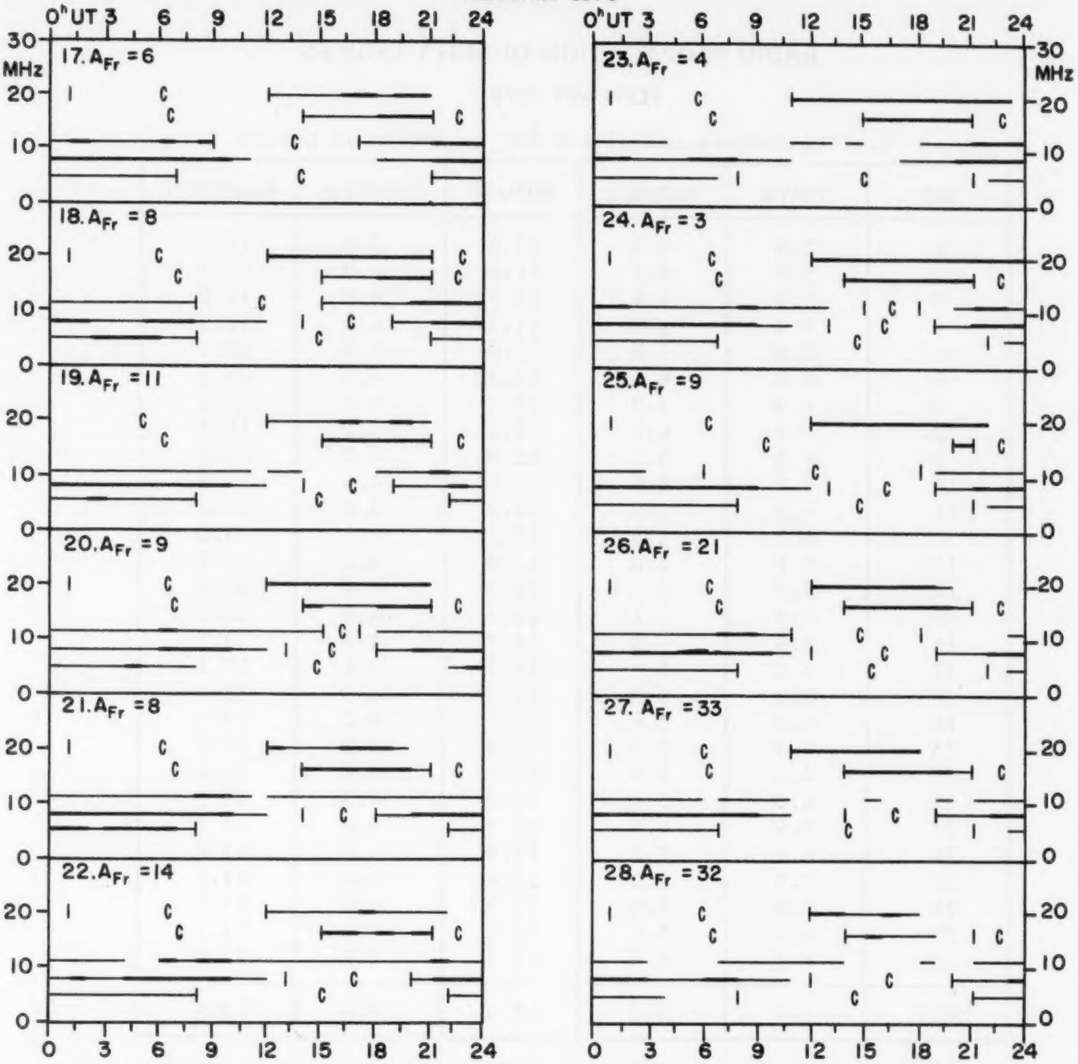
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1978



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1978



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow - Norfolk circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

FEBRUARY 1978

Quality indices calculated for reception at Lüchow

DAY	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKNELL
1	5.0	6.5	12.0	3.8	12.6
2	5.8	6.7	11.8	4.0	12.3
3	5.3	6.4	11.7	4.5	12.6
4	4.9	5.6	11.7	4.6	12.9
5	5.8	5.9	11.9	4.9	13.0
6	4.8	6.1	12.2	4.5	13.2
7	4.3	7.5	12.4	4.6	13.1
8	4.4	6.6	12.2	4.1	12.9
9	4.3	5.7	12.8	4.2	12.3
10	5.2	6.6	12.6	4.4	12.9
11	4.2	6.0	12.2	3.9	13.0
12	6.1	6.8	12.2	4.5	13.0
13	6.1	7.0	12.8	5.2	12.9
14	6.0	6.3	11.9	4.4	12.8
15	4.5	5.1	12.7	4.8	12.6
16	5.9	4.9	11.7	4.2	13.1
17	5.1	5.4	12.2	3.6	13.2
18	3.5	6.2	12.7	4.3	13.4
19	4.4	5.4	12.5	4.2	13.1
20	4.3	6.2	12.2	4.3	13.0
21	4.5	5.9	12.4	4.4	12.9
22	4.0	5.4	13.3	4.5	12.5
23	3.9	7.9	13.3	4.2	13.4
24	4.6	8.2	12.8	4.9	13.6
25	7.2	8.0	12.4	5.3	13.5
26	6.0	6.6	12.5	4.8	13.5
27	4.4	5.6	12.5	4.4	12.3
28	4.3	4.4	12.3	4.2	11.3
MEAN	5.0	6.2	12.4	4.4	12.9

USCOMM-NOAA-ASHEVILLE,N.C. - 5/78/950

APR

S

CO

Data
Expl

nc

APRIL 1978 Number 404 P-A STACKS

Solar-Geophysical Data comprehensive reports

Data for October 1977 -- September 1977 & Miscellanea

Explanation of Data Reports Issued as Number 402 (Supplement) February 1978

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA SERVICE / BOULDER, COLORADO

U.S. DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Richard A. Frank, Administrator
ENVIRONMENTAL DATA SERVICE
Thomas S. Austin, Director

Solar - Geophysical Data

NO. 404 APRIL 1978

Part II (Comprehensive Reports)

DATA FOR
OCTOBER 1977
SEPTEMBER 1977
& MISCELLANEA

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80302.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO 80302. Subscription Price: $34.00 annually for both Part I (Prompt Reports) and Part II (Comprehensive Reports) or $18.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add $32.00 for both parts or $16.00 for either part. Single issue price $1.50 for either part and $1.40 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC.

To standardize referencing these reports in the open literature, the following format is recommended:

Solar-Geophysical Data, 390 Part I (or Part II), pages, February 1977, U.S. Department of Commerce, (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 404

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Director
Solar-Terrestrial Data Services Division

CONTENTS

	PAGE
Part I (Prompt Reports)	
Index for 1977 and 1978	2
Data for March 1978	3-36
Data for February 1978	37-146
Part II (Comprehensive Reports)	
Index for 1977 and 1978	2
Data for October 1977	3-42
Data for September 1977	43-53
Miscellaneous Data	55-70
Solar Radio Waves Spectral Observations Culgoora, January 1978	
Solar X-ray Radiation OSO-8 5.09Å, 5.68Å, 5.82Å June-September 1977	

INDEX FOR 1977 AND 1978 DATA PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1977 Aug	Sep	Oct	Nov	Dec	1978 Jan	Feb	Mar
A.	SOLAR AND INTERPLANETARY PHENOMENA								
A.1	Sunspot Drawings	398A 36	399A 34	400A 30	401A 36	402A 38	403A 47	404A 40	
A.2a	Zurich Provisional Relative Sunspot Numbers Rz	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.2b	Zurich Final Sunspot Numbers Rz	404A 7	404A 8	404A 8	404A 8	404A 8			
A.2c	American Relative Sunspot Numbers RA'	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	[illegible]
A.3a	Mt. Wilson Magnetograms	898A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	398A 98	399A 94	400A 92	401A 96	402A100	403A108	404A 96	
A.3c	Kitt Peak Magnetograms	398A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.3d	Mean Solar Magnetic Field (Stanford)	397A 25	398A 29	399A 29	400A 24	401A 31	402A 33	404A 33	
A.4	H-alpha Filtergrams	398A 36	399A 34	400A 30	401A 36	402A 38	403A 47	404A 40	
A.5	Calcium Plage Drawings - McMath (or Catania)	398A 36	399A 34	400A 30	401A 36	402A 38	403A 47	404A 40	
A.5a	Calcium Plage (McMath) and Sunspot Regions	398A 98	399A 94	400A 92	401A 96	402A100	403A108	404A 96	
A.5b	McMath Daily Calcium Plage Indices	398A105	399A 99	400A 99	401A100	402A105	403A114	404A104	
A.6	H-alpha Synoptic Charts	398A 34	399A 32	400A 28	401A 35	402A 36	403A 44	404A 38	
A.6b	Synoptic Chart and Active Regions (Paris)	402B 4	403B 4	404B 4					
A.7f	Helium D3 Chromosphere (Big Bear)	397A 19	398A 24	399A 24	400A 21	401A 28	402A 29	403A 36	404A 29
A.7g	Helium Synoptic Maps (KPNO)	397A 20	398A 22	399A 23	400A 20	401A 27	402A 28	403A 35	404A 27
A.7h	Coronal Line Emission (Sac Peak)	398A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	[illegible]
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	[illegible]
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	397A 7	398A 7	399A 7	400A 7	401A 7	402A 9	403A 9	404A 9
A.9cb	8.6 mm Radio Maps of the Sun (NOSC - La Posta)	398A 36	400B 57	400A 30	401A 36	402A 38	403A 47	404A 40	
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	398A 36	400B 52	400A 30	401A 36	402A 38	403A 47	404A 40	
A.10a	169 MHz - Interferometric Observations (Nancay)	397A 13	398A 14	399A 14	400A 12	401A 15	402A 16	403A 20	404A 17
A.10c	21 cm East-West Solar Scans (Fleurs)	397A 15	398A 16	399A 16	400A 14	401A 17	402A 19	403A 23	404A 20
A.10d	43 cm East-West Solar Scans (Fleurs)	397A 16	398A 17	399A 17	400A 15	401A 18	402A 20	403A 24	404A 21
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	397A 14	398A 15	399A 15	400A 13	401A 16	402A 18	403A 22	[illegible]
A.10f	3 cm East-West Solar Scans (Toyokawa)					403B 68	402A 17	403A 21	[illegible]
A.11k	Solar X-ray Radiation (SOLRAD 11)						403A116	404A108	
A.11g	Solar X-ray (SMS/GOES)	---	398A 25	399A 20	400A 17	401A 22	402A 24	403A 29	[illegible]
A.11h	Solar X-ray (OSO-8; 1975-057A)	398A 36	399A 34	400A 30	401A 36	402A 38	403A 46	404A 40	
A.11i	Solar X-ray (Columbia U.)	404B 65	404B 68	404B 40					
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	397A 23	---	399A 26	---	---	402A 30	---	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	---	---	399A 27	---	---	402A 31	---	---
A.12e	Energetic Solar Particles (IMP H & J)	402B 24	403B 37	404B 35					
A.13a	Solar Wind (Pioneers 6 & 7)	397A 23	---	399A 26	---	---	402A 30	---	---
A.13ab	Solar Wind (Pioneers 8 & 9)	---	---	399A 27	---	---	402A 31	---	---
A.13d	Solar Wind from IPS Measurements	397A 27	398A 27	399A 25	400A 25	401A 29	402A 34	403A 37	404A 31
A.13e	Solar Plasma (IMP H & J)	402B 23	403B 22	404B 34					
A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	---	---	---	---	---	402A 31	---	---
A.17c	Inferred IP Magnetic Field	397A 24	398A 28	400A 22	400A 22	401A 30	402A 32	403A 38	404A 32
A.18	Interplanetary Electric Field (Pioneer 8)	---	---	399A 27	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	---	---	---	---	---	402A 31	---	---
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA								
B.52	Graphs of Transmission Frequency Range	398A124	399A128	400A120	401A116	402A132	403A148	404A144	
B.53	Quality Figures Based on Frequency Ranges	398A126	399A127	400A122	401A118	402A131	403A150	404A146	
C.	FLARE-ASSOCIATED EVENTS								
C.1a	Optical Observations Flares	397A 10	398A 10	399A 10	400A 10	401A 10	402A 12	403A 12	404A 12
C.1ba	Optical Observations Flares (Standardized Data)	402B 8	403B 8	404B 8					
C.1d	Flare Patrol Observations	397A 12	398A 13	399A 13	400A 11	401A 14	402A 15	403A 19	404A 16
C.1d	Flare Patrol Observations	402B 17	403B 21	404B 22					
C.1e	Flare Indices (by day)	402B 16	403B 20	404B 21					
C.1f	Flare Indices (by Region)	403B 53	404B 53						
C.3	Solar Radio Waves - Outstanding Occurrences	402B 18	403B 22	404B 23					
	Solar Radio Waves - Fixed Frequencies - Selected	397A 17	398A 18	399A 18	400A 16	401A 19	402A 21	403A 25	404A 22
C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	399B 36	399A113	401B 44	403B 64	403B 65			
C.4a	Solar Radio Spectral Obs. (Fort Davis)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4d	Solar Radio Spectral Obs. (Culgoora)	400B 62	399A102	401B 38	403B 56	403B 59	404B 56		
C.4e	Solar Radio Spectral Obs. (Weissenau)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4i	Solar Radio Spectral Obs. (Durnten)	398A107	399A102	400A101	401A102	402A108	403A132	404A122	
C.4j	Solar Radio Spectral Obs. (Manila)		399A102	400A101	401A102	402A108	403A132	404A122	
C.5e	Solar X-ray (SMS/GOES)	397A 22	399B 37	399A 22	400A 19	401A 24	402A 26	403A 29	404A 26
C.5f	Solar X-ray (Columbia U.)								
C.6	Sudden Ionospheric Disturbances	398A106	399A100	400A100	401A101	402A106	403A115	404A105	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA								
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	398A117	399A120	400A113	401A109	402A125	403A142	404A139	
D.1ba	27-day Chart of Kp Indices	398A119	399A122	400A115	401A111	402A127	403A144	404A141	
D.1c	27-day Chart of C9	404A142	404A142	404A142	404A142	404A142			
D.1d	Principal Magnetic Storms	398A122	399A125	400A118	401A114	402A130	403A145	404A143	
D.1e	Reduced Magnetograms								
D.1f	Sudden Commencement and Solar Flare Effects	398A123	399A126	400A119	401A115	403B 69	403A147		
D.1g	Equatorial Indices Dst	398A121	399A124	400A117	401A113	402A129			
F.	COSMIC RAYS								
F.1a	Cosmic Ray Neutron Counts (Deep River)	398A116	399A115	400A112	402B 47	402A124	403A138	404A138	
F.1b	Cosmic Ray Neutron Counts (Climax)	398A116	399A115	400A112	401A108	402A124			
F.1e	Cosmic Ray Neutron Counts (Alert)	398A116	399A115	400A112	402B 47	402A124	403A138	404A138	
F.1f	Cosmic Ray Neutron Counts (Calgary)	400B 70	400B 70	402B 47					
F.1g	Cosmic Ray Neutron Counts (Sulphur Mountain)	400B 70	---	402B 47					
F.1h	Cosmic Ray Neutron Counts (Thule)								
F.1i	Cosmic Ray Neutron Counts (Kiel)	398A116	399A115	400A112	401A108	402A124	403A138	404A138	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	398A116	399A115	400A112	401A108	402A124	403A138	404A138	
F.1k	Cosmic Ray Neutron Counts (Kula)	398A116							
H.	MISCELLANEOUS								
H.60	IUWDS Alert Decisions	397A 4	398A 4	399A 4	400A 4	401A 4	402A 5	403A 5	404A 4
H.62	Abbreviated Calendar Record	403B 46	404B 46						

Notes:

"398A 36" listed under 1977 Aug means that data for August 1977 were contained in *Solar-Geophysical Data* Number 398 - Part I, beginning on page 36.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

OCTOBER 1977 DATA

Contents

	Page
Active Regions	4-5
Synoptic Solar Maps	6-7
Solar Flares	
$H\alpha$ Solar Flares (Standardized Data)	8-20
Daily Flare Indices	21
No-Flare-Patrol Chart	22
Solar Radio Waves	
Worldwide Outstanding Occurrences at Fixed Frequencies	23-33
Energetic Solar Particles and Plasma	34-39
Solar X-ray Radiation	
OSO-8 5.09Å, 5.68Å, 5.82Å	40-42
Magnetograms of Geomagnetic Storm	
(Data not available at time of publication)	

ACTIVE REGIONS

CARRINGTON ROTATION 1660

(September 30 - October 27, 1977)

Region No.	Coordinates Lat.	Coordinates Long.	Age at CMP	Imp.	Spot-less Region	Region No. in Rotation 1659	Activity at West Limb
1	15°N	344°	>6	4			decreasing
2	32 N	338	+2	3			decreasing
3	26 N	318	>6	1	x		dispersed
4	36 S	317	+4	1	x		disappeared
5	22 S	303	>6	3			decreasing
6	20 N	298	>6	2			decreasing
7	32 N	298	>6	1	x		dispersed
8	29 N	267	+3	1	x		disappeared
9	19 N	260	+6	2	x		increasing
10	34 S	259	+1	1	x		disappeared
11	23 N	209	>6	1	x		decreasing
12	16 N	207	>6	1	x	(9)	decreasing
13	6 N	204	>6	3		(10)	decreasing
14	30 N	199	0	2			decreasing
15	17 S	191	+1	1	x		disappeared
16	18 N	173	+1	2			decreasing
17	24 S	170	-5	1	x		(?)
18	23 N	165	-5	2			(?)
19	24 N	160	>6	1	x		dispersed
20	19 N	159	>6	3			decreasing
21	23 N	148	0	2			stable
22	26 N	148	>6	1	x	(12)	dispersed
23	39 N	140	0	1	x		disappeared
24	22 S	120	+6	1	x		dispersed
25	25 S	114	+6	1	x		dispersed
26	23 N	109	+6	3			decreasing
27	28 S	91	>6	1	x	(17)	dispersed
28	29 N	89	>6	1	x	(18)	dispersed
29	24 S	85	+3	4			decreasing
30	17 N	81	+6	1	x		dispersed
31	29 N	63	>6	1	x	(19)	dispersed
32	29 N	48	>6	1	x	(19)	dispersed
33	18 N	43	-2	2			decreasing
34	26 S	40	+4	1	x		decreasing
35	31 N	30	>6	1	x		dispersed

ACTIVE REGIONS

CARRINGTON ROTATION 1661

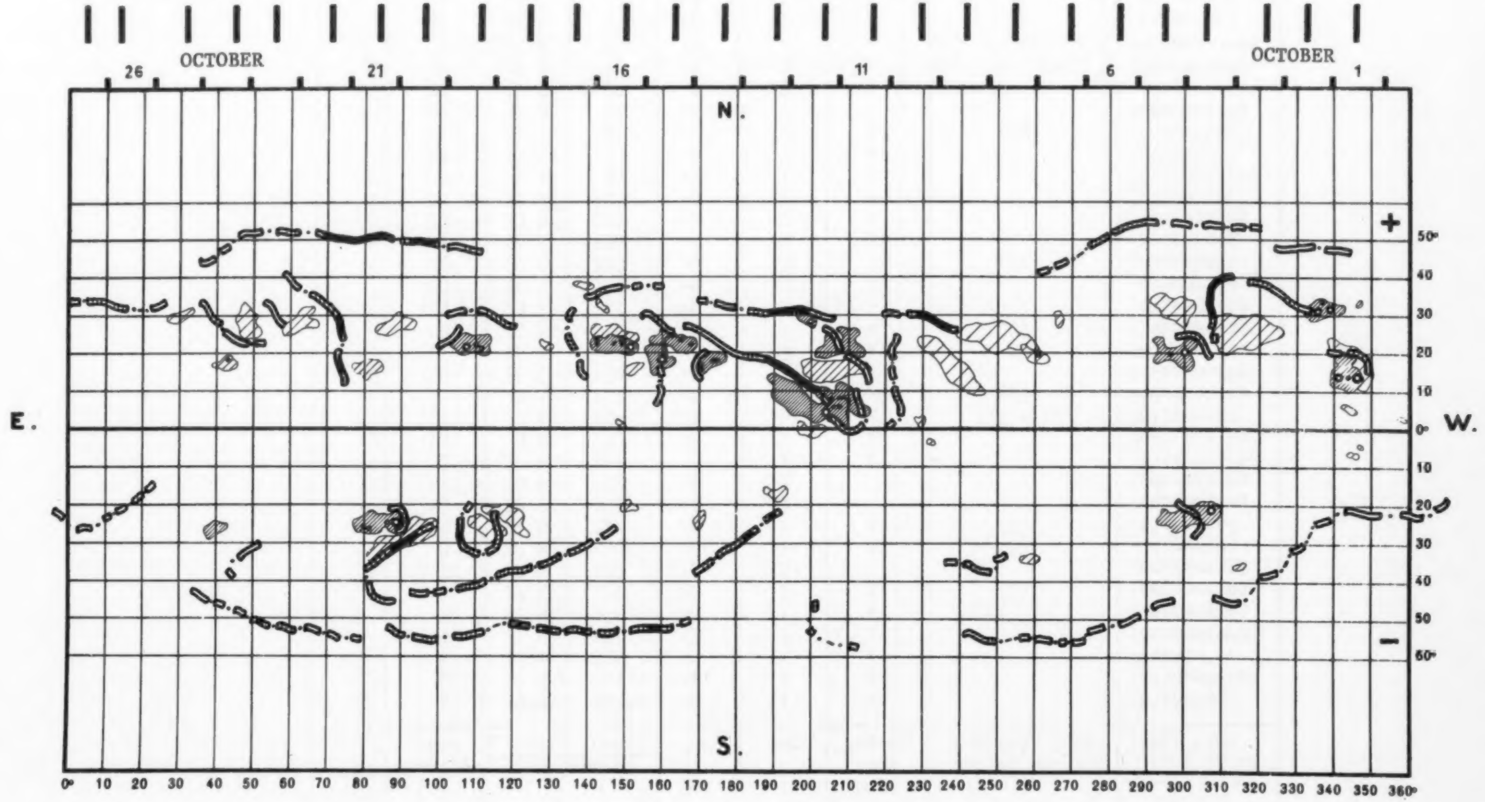
(October 27 - November 24, 1977)

Region No.	Coordinates		Age at CMP	Imp.	Spot-less Region	Region No. in Rotation 1660	Activity at West Limb
	Lat.	Long.					
1	19°N	352°	>6	1	x		dispersed
2	17 N	351	>6	1	x		disappeared
3	18 S	346	-1	1	x		stable
4	17 S	341	+2	1	x		decreasing
5	21 N	330	>6	1	x		decreasing
6	32 N	328	>6	1	x	(2)	decreasing
7	32 N	328	+3	2			decreasing
8	22 N	300	>6	1	x	(5)	dispersed
9	21 N	297	>6	1	x	(6)	dispersed
10	23 S	269	>6	3			decreasing
11	20 N	252	>6	3			decreasing
12	20 N	241	0	1	x		disappeared
13	9 N	212	>6	1	x		decreasing
14	20 N	206	>6	1	x	(11 + 12)	dispersed
15	8 N	202	>6	1	x	(13)	decreasing
16	26 S	189	-4	1	x		increasing
17	26 N	167	>6	1	x	(18)	dispersed
18	21 N	150	>6	1	x	(20)	decreasing
19	23 S	147	+5	2			decreasing
20	30 N	137	>6	1	x		dispersed
21	24 N	136	>6	2		(21)	decreasing
22	25 S	135	-1	1	x		dispersed
23	13 N	103	-3	1	x		decreasing
24	27 N	103	>6	1	x		dispersed
25	6 N	99	-2	1	x		disappeared
26	13 N	90	-4	1	x		stable
27	25 S	80	>6	1	x	(29)	dispersed
28	38 N	76	>6	2			decreasing
29	27 S	66	0	1	x		dispersed
30	24 N	63	+4	4			decreasing
31	31 N	63	+5	1	x		disappeared
32	22 N	53	>6	1	x		dispersed
33	18 S	46	>6	2			dispersed
34	22 N	41	>6	1	x		dispersed
35	25 S	38	+4	1	x		disappeared
36	15 N	35	-3	1	x		decreasing
37	15 N	29	>6	2			decreasing
38	25 N	27	-1	2			decreasing
39	31 N	18	>6	1	x		decreasing

SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1660
SEPTEMBER 30 TO OCTOBER 27, 1977

MEUDON OBSERVATORY

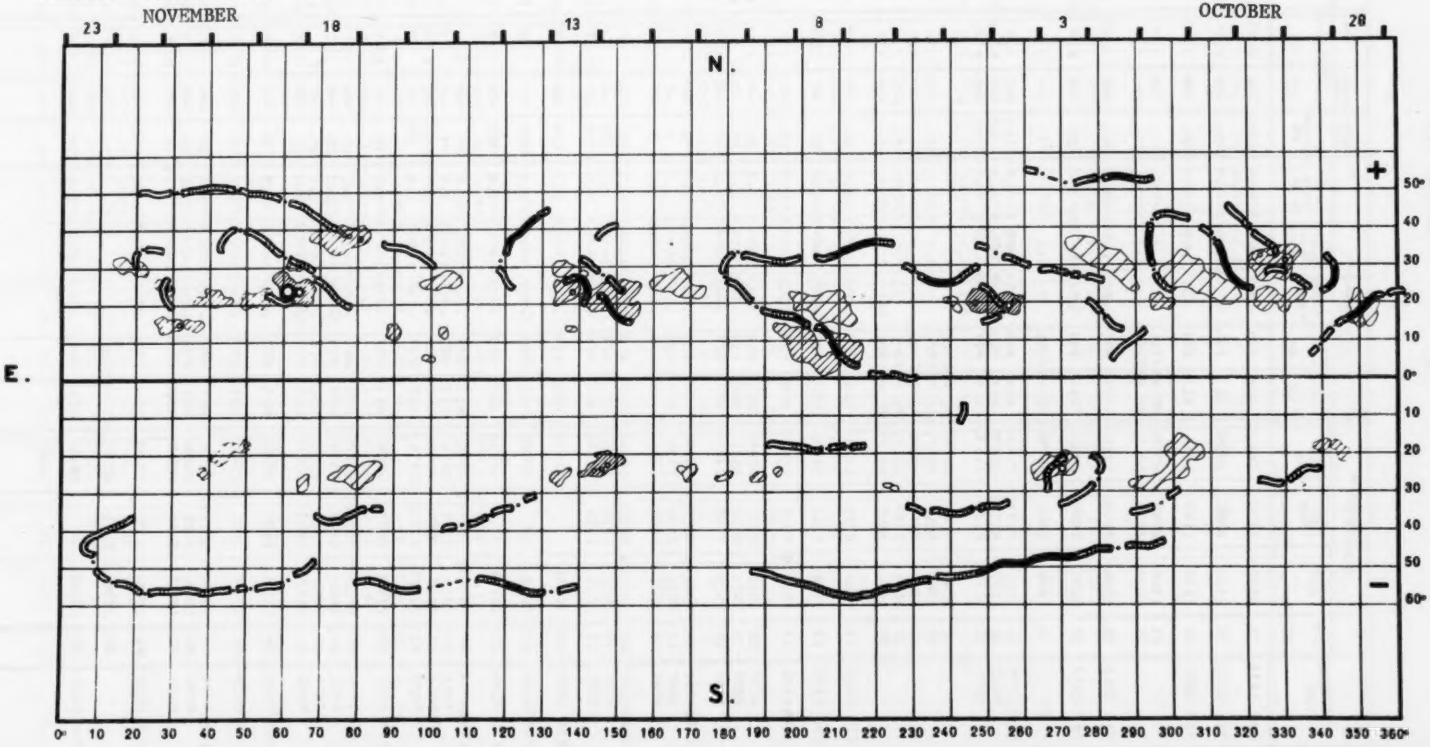


SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1661

OCTOBER 27 TO NOVEMBER 24, 1977

MEUDON OBSERVATORY



Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	OBS. TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	REMARKS
723 CATA	01	0750	0755	0800D	N16	E01	.162	14963	1.4	10D	-N	2		0755	28	.3	Y5
724 CATA	01	0935	0935	0955	N13	E04	.129	14963	1.7	20	-9	2		0935	56	.6	Y5
725 KANZ	01	1142	1149	1206	N15	E01	.145	14963	1.6	24	-F		C				Y5
	01	1948	1959	NO FLARE PATROL													
	01	2018	2035	NO FLARE PATROL													
726 CULG	02	0126	0148	0206	S25	W52	.863	14958	28.2	40	-F		C	0148	50	1.0	Y5
727 CATA	02	0855	0855	0915	N14	W11	.226	14963	1.5	20	-B	2		0855	28	.3	Y5
	02	1836	1845	NO FLARE PATROL													
GRP64728	02	2132E	2132	2143D	N14	W18	.328	14963	1.5	11	-F				40	.4	H
PALE	02	2132E	2132U	2137D	N13	W19	.338	14963	1.5	50	-F	3	V		37		DE H
RAMY	02	2136E	2136U	2143D	N15	W17	.320	14963	1.6	70	-N	3	C		40		
	02	2143	2245	NO FLARE PATROL													
	02	2303	2318	NO FLARE PATROL													
	02	2349	2356	NO FLARE PATROL													
	03	0002	0008	NO FLARE PATROL													
	03	0056	0215	NO FLARE PATROL													
729 CULG	03	0256	0310	0345	N16	W20	.370	14963	1.6	49	-F		C	0310	20	.2	Y5
730 KANZ	03	0716	0810	0813	N32	W17	.499	14967	2.0	57	-F		C				Y5
GRP64731	03	0913>9	0915 0929+2	0941	N32	W18	.506	14967	2.0	28	-F						E
MONT	03	0913	0915	0924	N31	W19	.503	14967	2.0	11	-F		C	0915	40		E
MONT	03	0921	0929	0946	N33	W19	.526	14967	2.0	25	-N		C	0929	80		E
KANZ	03	0928	0931	0935	N32	W17	.499	14967	2.1	7	-F		C				E
GRP64732	03	0931+8	0933+2	0937	N17	W25	.447	14963	1.5	6	-F						
KANZ	03	0931	0935	0938	N17	W25	.447	14963	1.5	7	-F		C				E
MONT	03	0931	0933	0936	N18	W25	.452	14963	1.5	5	-F		C	0933	40		D
GRP64733	03	1014>9	1034+1	1045D	N13	W23	.399	14963	1.7	31	-F						D
MONT	03	1014	1035	1045D	N14	W23	.403	14963	1.7	31D	-N		C	1035	110		
MEUD	03	1032	1034	1038D	N13	W24	.414	14963	1.6	6D	-F		C	1034	40	.4	D
734 MCMA	03	1158E		1245D	N33	W18	.518	14967	2.1	47D	-N		C	1212	80	1.0	E Y5
735 MCMA	03	1710		1730D	N13	W30	.503	14963	1.5	20D	-F		P	1717	40	.5	EL Y5
736 MCMA	03	1717E		1718D	N32	W23	.548	14967	2.0	1D	-N		P	1717	40	.5	E Y5
GRP64737	03	2321+2	2325+0	2336	N13	W32	.532	14963	1.6	15	-N				60	.7	
CULG	03	2321	2325	2344	N13	W33	.546	14963	1.5	23	-N		C	2325	25	.3	
PALE	03	2323	2325	2335	N13	W30	.503	14963	1.7	12	-N	3	C		93		FDE
MANI	03	2327E	2327U	2336	N12	W32	.530	14963	1.6	9D	-N		V	2327	60	.7	
738 PALE	03	2356	2357	0006	N13	W31	.518	14963	1.7	10	-F	3	C		55		F Y5
GRP64739	04	0800+2	0805+2	0817	N33	W28	.603	14967	2.2	17	-N				120	1.5	E
BUCA	04	0800	0806	0820	N33	W28	.603	14967	2.2	20	-F		C	0806	128	1.7	CE
CATA	04	0800	0805	0815	N32	W28	.594	14967	2.2	15	-B	2		0805	112	1.4	
KANZ	04	0802	0807	0817	N33	W27	.594	14967	2.3	15	-N		C				
740 HUAN	04	1434	1435	1437	N33	W31	.630	14967	2.3	3	-F	1	C	1435	20	.2	D Y5
741 HUAN	04	1543		1548	N31	W33	.634	14967	2.2	5	-F	1	C				Y5
GRP64742	04	1606+8	1614+2	1623	N33	W33	.649	14967	2.2	17	-N						
MCMA	04	1606	1614	1625	N34	W34	.665	14967	2.1	19	-N		C	1614	80	1.1	E
HUAN	04	1614	1616	1620	N33	W32	.639	14967	2.3	6	-N	1	C	1616	30	.4	D
743 MCMA	04	1823		1930D	N34	W37	.692	14967	2.0	67D	-F		C	1844	70	1.0	EK Y5
	05	0039	0045	NO FLARE PATROL													
744 BUCA	05	0745E		0805	N31	W46	.760	14967	1.9	20D	-N		C	0745	53	.8	CD Y5

Hα SOLAR FLARES

OCTOBER 1977

OBSERVATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	REMARKS
GRP64745	05	0805+5	0813+2	0824	N10	E90	1.000	14979	12.1	19	-N						
KANZ	05	0805	0813	0824	N09	E90	1.000	14979	12.1	19	-F		C				
CATA	05	0810	0815	0815D	N11	E90	1.000	14979	12.1	50	1N	2		0815	112		
GRP64746	05	1007+1	1009 1018	1030	N31	W47	.769	14967	1.9	23	-F						D
ZURI	05	1007	1009	1033	N31	W47	.769	14967	1.9	26	-F		P	1009	20	.3	
KANZ	05	1008	1018	1026	N32	W48	.781	14967	1.8	18	-F		C				D
GRP64747	05	1203	1219	1231	N31	W48	.778	14967	1.9	28	-N				45	.7	E
ZURI	05	1203	1219	1231	N31	W48	.778	14967	1.9	28	-N		C	1219	60	1.0	
HUAN	05	1219E		1224D	N31	W49	.787	14967	1.8	50	-N	1	P	1220	30	.4	E
748 ZURI	05	1255	1317	1329	N31	W48	.778	14967	1.9	34	-N		C	1317	40	.7	Y5
GRP64749	05	1315+4	1325+5	1342	N08	E90	1.000	14979	12.3	27	-N						
CATA	05	1315	1330	1330D	N07	E90	1.000	14979	12.3	150	1N	2		1330	56		
KANZ	05	1319	1325	1342	N09	E90	1.000	14979	12.3	23	-N		C				
RAMY	05	1323E	1326	1334D	N09	E90	1.000	14979	12.3	110	-N	4	C				FDE
GRP64750	05	1333+2	1337+2	1354	N16	W54	.805	14963	1.5	21	-N				60	1.0	
ZURI	05	1333	1337	1401	N18	W55	.817	14963	1.4	28	-N		C	1337	40	.8	
KANZ	05	1335	1339	1353	N15	W54	.805	14963	1.5	18	-N		C				
RAMY	05	1335E	1337	1354	N15	W54	.805	14963	1.5	190	-N	4	C		80		FDE
GRP64751	05	1353+4	1359+6	1416	N31	W50	.795	14967	1.8	23	-N						
ZURI	05	1353	1359	1415	N31	W49	.787	14967	1.9	22	-N		C	1359	70	1.2	
KANZ	05	1357	1405	1416	N32	W51	.807	14967	1.8	19	-N		C				
GRP64752	05	1446+1	1449	1501	N30	W50	.792	14967	1.9	15	-F						
HUAN	05	1446		1453D	N30	W51	.801	14967	1.8	70	-F	1	P				
ZURI	05	1447	1449	1501	N31	W49	.787	14967	1.9	14	-N		C	1449	50	.8	
GRP64753	05	1528+7	1539+4	1551	N31	W51	.804	14967	1.8	23	-N						D
KANZ	05	1528	1543	1551	N32	W52	.815	14967	1.7	23	-B		C				D
ZURI	05	1535	1539	1543D	N31	W50	.795	14967	1.9	80	-N		P	1539	50	.8	
	05	1551	1713	NO FLARE PATROL													
754 PALE	05	1713	1715	1722D	N30	W50	.792	14967	2.0	90	-F	3	C		42		DE Y5
	05	1918	2121	NO FLARE PATROL													
	05	2209	2215	NO FLARE PATROL													
	05	2223	2230	NO FLARE PATROL													
755 CULG	05	2235E	2243	2317	N17	W59	.853	14963	1.5	420	-F		P	2243	30	.6	Y5
GRP64756	05	2242+3	2246+1	2252	N30	W54	.827	14967	1.9	10	-N				50	.9	D
CULG	05	2242	2247	2253	N31	W55	.837	14967	1.8	11	-N		C	2247	25	.5	
VORO	05	2245	2246	2251	N30	W54	.827	14967	1.9	6	-B		C	2246	72	1.3	D
757 CULG	05	2316	2340	2350	N03	E90	1.000	14979	12.7	34	-F		C	2340	10		Y5
GRP64758	06	0023+4	0031+6	0040	N30	W55	.835	14967	1.9	17	-N				90	1.7	E
CULG	06	0023	0037	0058	N31	W55	.837	14967	1.9	35	-N		C	0037	70	1.3	
VORO	06	0026	0032	0038	N30	W58	.859	14967	1.7	12	-B		C	0032	99	1.9	
MITK	06	0027	0031	0039	N30	W55	.835	14967	1.9	12	-N		C	0031	100	1.9	E
MANI	06	0028E	0031	0040D	N30	W53	.819	14967	2.0	120	-N		V	0031	80	1.4	
759 MANI	06	0215E	0215U	0223D	N06	E85	.995	14979	12.5	80	-F		V	0215	30	.8	Y5
760 MITK	06	0248	0251	0258	N30	W57	.851	14967	1.8	10	-F		C	0251	60	1.2	E Y5
GRP64761	06	0425+2	0432 0444	0500	N31	W59	.868	14967	1.8	35	1N				110	2.4	EHJK
VORO	06	0425		0430D	N31	W60	.875	14967	1.7	50	-B		C	0429	81	1.7	E
CULG	06	0425	0444	0503	N32	W58	.862	14967	1.8	38	1N		C	0444	115	2.2	FKJ
MITK	06	0427	0432	0457	N30	W58	.859	14967	1.8	30	1N		C	0432	140	2.9	EH
GRP64762	06	0459+5	0502+6	0517	N32	W59	.870	14967	1.8	18	1N				120	2.6	VZ
MITK	06	0459	0502	0517	N33	W58	.864	14967	1.9	18	1N		C	0502	190	4.0	E
MANI	06	0500	0503	0509D	N31	W60	.875	14967	1.7	90	-N		V	0503	80	1.5	Z
CULG	06	0500	0502	0520	N34	W58	.866	14967	1.9	20	1N		C	0502	160	3.2	V
TACH	06	0504	0508	0514	N31	W60	.875	14967	1.7	10	-B		C	0508	80	1.5	D
763 ABST	06	0643E	0646	0648D	N33	W59	.871	14967	1.9	50	-F		P	0646	79	1.6	DJ Y5

Hα SOLAR FLARES

OCTOBER 1977

OBSERVATORY	OBSERVED UT: DATE (OCT)	START	MAX PHASE	END	LOCATION: APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	TYPE	MEASUREMENTS: TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	REMARKS	
764 ABST	06	0651E	0651	0657D	N31	W59	.868	14967	1.9	60	-F		P	0651	87	1.8	EJ	Y5
GRP64765	06	0801+5	0805+5	0822	N06	E81	.986	14979	12.4	21	-N						E	
BUCA	06	0801	0805	0829	N07	E80	.983	14979	12.3	28	-B		C	0805	64		E	
TEHR	06	0805E	0809	0831	N06	E82	.989	14979	12.5	260	-F	3	C		95			
ZURI	06	0805E	0805	0813	N06	E81	.986	14979	12.4	80	-N		P	0805	10			
KANZ	06	0806	0810	0815	N06	E82	.989	14979	12.5	9	-N		C					
GRP64766	06	0907+3	0908+5	0915	N32	W63	.897	14967	1.7	8	-N						DJ	
ABST	06	0907E	0908	0913	N32	W65	.909	14967	1.5	60	1N		P	0913	96	2.3	DJ	
KANZ	06	0910	0913	0917	N32	W61	.884	14967	1.8	7	-F		C					
GRP64767	06	0940+1	0941	0945	N09	E85	.995	14979	12.8	5	-F						D	
BUCA	06	0940		0945	N09	E85	.995	14979	12.8	5	-F		C	0941	43		D	
KANZ	06	0941	0941	0945	N09	E85	.995	14979	12.8	4	-F		C				D	
GRP64768	06	0941+7	0951+5	0958	N33	W62	.892	14967	1.8	17	-F						DJ	
KANZ	06	0941	0956	0956	N32	W62	.890	14967	1.8	15	-F		C					
ABST	06	0948	0951	0959	N34	W63	.899	14967	1.7	11	-N		C	0951	79	1.9	DJ	
GRP64769	06	1051+4	1053	1105	N06	E82	.989	14979	12.6	14	-N						EJ	
			1101															
ABST	06	1051	1053	1056	N06	E85	.995	14979	12.8	5	1N		C	1053	70	3.0	EJ	
TEHR	06	1055	1101	1113	N07	E80	.983	14979	12.5	18	-F	3	C		127			
GRP64770	06	1215>9	1223	1405D	N31	W63	.896	14967	1.8	110	-N						K	
			1348															
MCMA	06	1215E	1223	1405D	N32	W62	.890	14967	1.9	1100	-N		C	1223	75	1.5	EK	
LVOV	06	1342	1348	1415	N30	W64	.901	14967	1.8	33	1F		C	1348	100	2.6	D	
GRP64771	06	1406	1413	1547D	N32	W64	.903	14967	1.8	101	-N						EHK	
			1437															
MCMA	06	1406	1437	1547D	N32	W64	.903	14967	1.8	1010	-N		C	1437	80	1.9	EHK	
MCMA	06	1406	1413	1547D	N32	W64	.903	14967	1.8	1010	-N		C	1413	50	1.4		
772 MCMA	06	1420	1423	1500	N05	E74	.959	14979	12.1	40	-N		C	1423	40	1.5	E	Y5
773 MCMA	06	1548	1552	1604D	N32	W64	.903	14967	1.9	16D	-N		C	1552	60	1.5	E	Y5
774 MCMA	06	1605	1608	1700D	N32	W65	.909	14967	1.8	55D	1B		C	1608	90	2.2	E	Y5
775 PALE	06	1821	1826	1837	N29	W64	.900	14967	2.0	16	-N	3	C		79		FDE	Y5
776 PALE	06	1946	1950	2001	N29	W66	.913	14967	1.9	15	-B	3	C		119		FDE	Y5
	06	2020	2047	NO FLARE PATROL														
777 CULG	06	2104	2107	2117	N30	W70	.937	14967	1.6	13	-F		C	2107	40	1.0		Y5
	06	2138	2146	NO FLARE PATROL														
778 CULG	06	2345	2348	2355	N20	W78	.973	14963	1.1	10	-F		C	2348	25			Y5
GRP64779	06	2345+1	2348+1	2357	N21	W23	.448	14969	5.3	12	-F				30	.3	D	
CULG	06	2345	2349	0002	N22	W23	.455	14969	5.3	17	-F	*	C	2349	20	.2		
VORO	06	2346	2348	2352	N20	W24	.453	14969	5.2	6	-F	*	C	2348	36	.4	D	
780 CULG	07	0030	0037	0050	N20	W23	.440	14969	5.3	20	-F		C	0037	50	.6		Y5
GRP64781	07	0124+7	0133+6	0206	N20	W25	.467	14969	5.2	42	-N				100	1.1	EJ	
VORO	07	0124	0133	0206	N21	W24	.461	14969	5.3	42	1N		C	0137	251	2.7	EJ	
MITK	07	0130E	0139	0148	N20	W25	.467	14969	5.2	18D	-N		C	0139	100	1.2	E	
CULG	07	0131	0136	0215	N20	W25	.467	14969	5.2	44	-N		C	0136	90	1.0		
GRP64782	07	0353+1	0355+0	0400	N08	E65	.902	14979	12.0	7	-N						D	
CULG	07	0353	0355	0401	N08	E65	.902	14979	12.0	8	-N		C	0355	30	.7		
VORO	07	0354	0355	0358	N09	E65	.902	14979	12.0	4	-B		C	0355	90	2.0	D	
783 CULG	07	0414	0423	0434	N30	W70	.937	14967	1.9	20	-F		C	0423	60	1.4		Y5
784 KANZ	07	0801	0805	0816	N19	W79	.976	14963	1.4	15	-F		C				D	Y5
785 MONT	07	0803E	0806	0814	N06	E67	.917	14979	12.4	110	-F		C	0806	20		D	Y5
786 MONT	07	0813	0816	0819	N12	E65	.901	14979	12.2	6	-F		C	0816	20			Y5
787 MONT	07	0815	0822	0829	N07	E69	.930	14979	12.5	14	-F		C	0822	40		E	Y5

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	REMARKS
788 MONT	07	0855	0859	0904	S34	E13	.672	14982	8.3	9	-F		C	0859	20		D Y5
789 KANZ	07	0909	0909	0916	N19	W79	.976	14963	1.5	7	-F		C				E Y5
790 MONT	07	1015	1021	1025	N29	W78	.972	14967	1.6	10	-F		C	1021	40		D Y5
791 MONT	07	1134	1135	1136	N12	E64	.893	14979	12.3	2	-F		C	1135	20		D Y5
GRP64792	07	1137+3	1141+6	1159	N06	E66	.910	14979	12.4	22	-F						D
MONT	07	1137	1141	1156	N06	E65	.903	14979	12.4	19	-F		C	1141	20		D
LVOV	07	1140	1147	1201	N06	E68	.924	14979	12.6	21	-F		C	1147	100		D
GRP64793	07	1253>9	1310	1310D	N03	E58	.847	14979	11.9	17	-N						EW
MCMA	07	1253	1313	1430D	N03	E58	.847	14979	11.9	97D	-N		C	1313	40	.8	EW
KANZ	07	1306	1310	1310	N03	E59	.856	14979	12.0	4	-N		C				
794 MCMA	07	1425	1428	1434	N18	W88	.998	14963	1.0	9	-F		C	1428			D Y5
GRP64795	07	1548+1	1550+0	1557	N05	E62	.880	14979	12.3	9	-N				50	1.1	DH
MCMA	07	1548	1550	1559	N05	E62	.880	14979	12.3	11	-N		C	1550	60	1.3	DH
HUAN	07	1549	1550	1555	N05	E63	.888	14979	12.4	6	-N	1	C	1550	50	1.0	
	07	1656	1710	NO FLARE PATROL													
796 PALE	07	1752	1756	1839	N07	E56	.825	14979	11.9	47	-F	3	V		43		FDE Y5
	07	1808	1835	NO FLARE PATROL													
797 HUAN	07	1848E		1907D	N05	E56	.826	14979	12.0	19D	-F	1	P				E Y5
798 HUAN	07	1848E		1855	N14	E70	.934	14979	13.0	7D	-F	1	P				Y5
	07	1934	1956	NO FLARE PATROL													
	07	2031	2038	NO FLARE PATROL													
GRP64799	07	2208	2211	2240	N04	E57	.837	14979	12.2	32	-N						L
CULG	07	2208	2211	2240	N03	E58	.847	14979	12.3	32	-N		C	2211	70	1.3	L
PALE	07	2223E	2223U	2224D	N06	E57	.835	14979	12.2	1D	1N	3	V		153		FDE
800 CULG	08	0005	0027	0036	N05	E58	.845	14979	12.4	31	-F		C	0027	25	.5	Y5
GRP64801	08	0055E	0105	0127	N07	E52	.784	14979	11.9	32	-F						
			0126														
PALE	08	0055E	0105	0127	N07	E52	.784	14979	11.9	32D	-F	3	V		49		FDE
PALE	08	0055E	0126	0127	N07	E52	.784	14979	11.9	32D	-F	3	V		22		FDE
GRP64802	08	0231	0232	0310	N05	E56	.826	14979	12.3	39	-N				80	1.4	F
			0252+3														
PALE	08	0231	0255	0300D	N06.	E55	.816	14979	12.2	29D	-N	3	V		98		FDE
PALE	08	0231	0232	0300D	N06	E55	.816	14979	12.2	29D	-N	3	V		63		FDE
CULG	08	0237E	0252	0310	N05	E57	.836	14979	12.4	33D	-N		C	0252	55	.9	F
803 ABST	08	0551	0552	0553	N08	E52	.784	14979	12.1	2	-F		C	0552	87	1.3	DJ Y5
804 ABST	08	0736	0737	0740	N03	E48	.742	14979	11.9	4	-F		C	0737	70	.9	DJ Y5
GRP64805	08	1230+5	1241+4	1402	N06	E44	.691	14979	11.8	92	1N						EIJSU
			1301+1														
MONT	08	1217	1241	1315D	N05	E43	.679	14979	11.7	58D	1N		C	1241	250		F
KHAR	08	1230E	1245	1320D	S00	E44	.699	14979	11.8	50D	1N		C	1230	165	2.4	E
LVOV	08	1230	1301	1410	N07	E45	.703	14979	11.9	100	2N		C	1301	400	5.8	EJ
TEHR	08	1235	1242	1326	N08	E43	.678	14979	11.7	51	-N	2	C		190		U S
TEHR	08	1235	1242	1326	N08	E43	.678	14979	11.7	51	-N	3	C		160		U S
KIEV	08	1235E	1302	1400D	N05	E44	.692	14979	11.8	85D	2N		C	1302	360	5.2	EI
HUAN	08	1250E		1403	N05	E43	.679	14979	11.8	73D	-N	1	P	1250	120	1.6	E
	08	1420	1429	NO FLARE PATROL													
	08	1630	1703	NO FLARE PATROL													
	08	1839	1922	NO FLARE PATROL													
	08	2013	2037	NO FLARE PATROL													
GRP64806	08	2044	2050+1	2053D	N07	E44	.691	14979	12.2	9	-F				80	1.1	S
CULG	08	2044	2050	2140	N07	E46	.715	14979	12.3	56	-N		C	2050	75	1.0	FS
PALE	08	2050E	2051	2053	N07	E43	.678	14979	12.1	3D	-F	3	V		80		FDE
807 CULG	09	0445	0448	0501	N07	E43	.678	14979	12.4	16	-F		C	0448	20	.4	Y5

Hα SOLAR FLARES

OCTOBER 1977

OBSERVATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	REMARKS	
GRP64808	09	0546+0	0553+4 0616	0619D	N06	E42	.666	14979	12.4	33	-F						FJS	
CULG	09	0546E	0623U	0702D	N07	E43	.678	14979	12.5	760	-F		P	0623	140	1.8	FS	
ABST	09	0546	0553	0607	N06	E46	.716	14979	12.7	21	-F		C	0553	79	1.1	DJ	
ABST	09	0553	0557	0607	N04	E43	.680	14979	12.5	14	-F		C	0557	87	1.2	DJ	
ABST	09	0615	0616	0619	N07	E39	.626	14979	12.2	4	-F		C	0616	79	1.0	DJ	
809 CULG	09	0547	0550	0558	N18	W15	.321	14975	8.1	11	-F		C	0550	20	.2		Y5
810 KANZ	09	0921	0921	0945	N10	E34	.557	14979	11.9	24	-F		C					Y5
	09	1416	1435	NO FLARE PATROL														
	09	1453	1919	NO FLARE PATROL														
	09	1923	2049	NO FLARE PATROL														
811 VORO	09	2303	2304	2309	N06	E29	.467	14979	12.1	6	-B		C	2304	72	.9	JL	Y5
812 VORO	10	0006	0014	0025	N06	E32	.527	14979	12.4	19	-B		C	0014	161	1.9	EL	Y5
	10	1759	1812	NO FLARE PATROL														
	10	1814	1821	NO FLARE PATROL														
	10	1838	1843	NO FLARE PATROL														
	10	1918	2027	NO FLARE PATROL														
GRP64813	10	2027E	2027	2120	N06	E10	.173	14979	11.6	53	-N						E	
CULG	10	2027E	2027E	2120	N06	E11	.190	14979	11.7	530	-N		P	2027	130	1.3		
MCMA	10	2040E		2100D	N06	E10	.173	14979	11.6	200	-N		P	2042	100	1.0	E	
814 CULG	10	2107	2110	2134	N20	E70	.934	14984	16.1	27	-F		C	2110	50	1.1	F	Y5
815 CULG	10	2203	2207	2225	N20	E65	.902	14984	15.8	22	-F		C	2207	30	.7		Y5
816 CULG	11	0550	0559	0625	N20	E66	.909	14984	16.2	35	-N		C	0559	50	1.1		Y5
817 ABST	11	0636E	0654	0702D	N19	E63	.887	14984	16.0	260	-F		P	0654	87	1.8	DJK	Y5
GRP64818	11	0735E	0735 0744	0748	N16	E60	.862	14984	15.8	13	-N						DJ	
CATA	11	0735E	0735	0740D	N17	E60	.862	14984	15.8	50	-N	1		0735	84	1.7		
ABST	11	0740E	0744	0748	N15	E61	.870	14984	15.9	80	-F		P	0744	105	2.0	DJ	
819 ZURI	11	0916E	0916	0942	N19	W46	.726	14975	7.9	260	-F		P	0916	20	.3		Y5
820 ABST	11	0925	0934	0942D	N22	E60	.865	14984	15.9	170	?F		P	0934	105	2.3	DJ	Y5
	IMP	1 NO	MEUD2	ZURI2	KHAR1	KIEV1 CATA1												
821 ZURI	11	1144E	1146	1150	N19	W47	.737	14975	8.0	60	-F		P	1146	20	.3		Y5
	11	1352	1402	NO FLARE PATROL														
	11	1508	1510	NO FLARE PATROL														
	11	1515	1742	NO FLARE PATROL														
	11	1752	1819	NO FLARE PATROL														
	11	1825	1926	NO FLARE PATROL														
	11	1943	2029	NO FLARE PATROL														
822 CULG	11	2102	2116	2130	N13	E02	.124	14979	12.0	28	-F		C	2116	40	.4		Y5
GRP64823	11	2301E	2301	2309	N14	E02	.140	14979	12.1	8	-B				90	.9	H	
PALE	11	2301E	2301U	2309	N14	E02	.140	14979	12.1	80	-B	3	C		89		DE H	
PALE	11	2301E	2301U	2309	N06	E02	.035	14979	12.1	80	-B	3	V		89		DE H	
CULG	11	2304E	2304E	2309	N14	E02	.140	14979	12.1	50	-N		P	2304	20	.2		
824 VORO	11	2355E		0000	N15	E03	.162	14979	12.2	50	-N		C	2357	27	.3		Y5
GRP64825	12	0003+1	0007+2	0015	N14	E01	.138	14979	12.1	12	-N						D	
VORO	12	0003	0007	0015	N15	E01	.156	14979	12.1	12	-E		C	0007	90	.9	D	
CULG	12	0004	0009	0015	N14	E02	.142	14979	12.2	11	-F		C	0009	20	.2		
GRP64826	12	0020	0034+5	0042	N10	E01	.070	14979	12.1	22	-N				60	.6		
CULG	12	0020	0036	0103	N08	W02	.048	14979	11.9	43	-N		C	0036	20	.2		
CULG	12	0027	0037	0040	N14	E01	.138	14979	12.1	13	-N		C	0037	25	.3		
MANI	12	0030E	0034U	0039	N14	E01	.138	14979	12.1	90	-N		V	0034	90	.9	E	
PALE	12	0033	0039	0042	N06	E01	.017	14979	12.1	9	-F	3	V		38		FDE	

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURA-TION MIN.	IMPOR-TANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	REMARKS
GRP64827	12	0150	0152	0215	N06	W02	.035	14979	11.9	25	1B				320	3.2	VZ
CULG	12	0150	0152	0215	N07	W03	.054	14979	11.9	25	1B		C	0152	260	2.6	VZ
MITK	12	0155E		0202D	N04	E02	.050	14979	12.2	7D	1N		P	0155	390	4.0	
PALE	12	0209E	0209U	0210D	N06	W02	.035	14979	11.9	10	-N	3	V		65		FDE
828 CULG	12	0200	0204	0210	N14	E01	.138	14979	12.2	10	-N		C	0204	20	.2	Y5
829 CULG	12	0402	0408	0435	N20	E90	.999	14991	18.9	33	?N		C	0408	60		Y5
	IMP.	1 NO	MITK1														
830 CULG	12	0420	0433	0500	N22	E53	.804	14984	16.2	40	-F		C	0433	60	1.0	L Y5
GRP64831	12	0618>9	0642+3	0732	N06	W08	.138	14979	11.7	74	-F				80	.8	DJ
CULG	12	0618	0642U	0732D	N06	W09	.156	14979	11.6	74D	-F		C	0642	60	.6	
ABST	12	0636	0645	0732	N06	W08	.138	14979	11.7	56	-F		C	0645	105	1.1	DJ
GRP64832	12	0755	0755	0809	N22	E90	.999	14991	19.1	14	-N						
CATA	12	0755	0755	0810	N22	E90	.999	14991	19.1	15	1N	2		0755	45		
MONT	12	0803E	0803	0807	N22	E90	.999	14991	19.1	4D	-F		C	0803	40		
833 ABST	12	0800	0802	0808	N23	E50	.777	14984	16.1	8	-F		C	0802	114	1.8	EJ Y5
834 KHAR	12	0825	0830	0835	N24	E50	.779	14984	16.1	10	-F		C				D Y5
GRP64835	12	0943+9	0952+3	1001	N07	W02	.038	14979	12.3	18	-N				45	.5	E
MONT	12	0943	0952	1004	N06	W03	.052	14979	12.2	21	-N		C	0952	60		E
ZURI	12	0945	0955	1001	N06	W02	.035	14979	12.3	16	-F		C	0955	30	.3	
WEND	12	0952		1001	N08	W01	.037	14979	12.3	9	-N						
836 ABST	12	1102	1105	1108	N16	E45	.709	14984	15.8	6	-F		C	1105	87	1.1	D Y5
837 ZURI	12	1147	1153	1201	N20	W60	.864	14988	8.0	14	-F		C	1153	40	.8	Y5
GRP64838	12	1211+0	1211+3	1224	N06	W03	.052	14979	12.3	13	-F				50	.5	E
MONT	12	1211	1214	1225D	N06	W04	.069	14979	12.2	14D	-F		C	1214	40		E
ZURI	12	1211	1211	1223	N06	W03	.052	14979	12.3	12	-F		C	1211	60	.6	
839 CATA	12	1250E	1250	1250D	N22	E90	.999	14991	19.3		-N	1		1250	28		Y5
GRP64840	12	1313+1	1315	1329	N06	W04	.069	14979	12.3	16	-F				45	.5	E
ZURI	12	1313	1315	1329	N06	W04	.069	14979	12.3	16	-N		C	1315	60	.6	
MEUD	12	1314		1328	N07	W04	.071	14979	12.3	14	-F		C	1320	30	.3	E
GRP64841	12	1431+4	1441	1448	N06	W03	.052	14979	12.4	17	-F						
ZURI	12	1431	1441	1445	N06	W04	.069	14979	12.3	14	-F		C	1441	50	.5	
WEND	12	1435		1451	N07	W03	.054	14979	12.4	16	-F						
842 ZURI	12	1501	1511	1517	N06	W05	.087	14979	12.3	16	-N		C	1511	60	.6	Y5
843 HUAN	12	1542E		1600D	N20	E88	.998	14991	19.3	18D	-F	1	P	1548	20		D Y5
	12	1610	1937	NO FLARE PATROL													
	12	1943	2031	NO FLARE PATROL													
844 CULG	12	2033	2039	2057	N06	W09	.156	14979	12.2	24	-F		C	2039	30	.3	Y5
845 CULG	12	2146	2149	2213	N06	W11	.190	14979	12.1	27	-F		C	2149	30	.3	F Y5
846 VORO	12	2243	2243	2249	N07	W09	.156	14979	12.3	6	-B		C	2246	99	1.0	D Y5
	12	2246	2250	NO FLARE PATROL													
847 VORO	12	2257	2258	2304	N07	W12	.207	14979	12.1	7	-B		C	2258	108	1.1	Y5
848 VORO	12	2312	2313	2315	N07	W12	.207	14979	12.1	3	-B		C	2313	63	.7	D Y5
GRP64849	13	0004+2	0005+2	0015	N07	W09	.156	14979	12.3	11	-N						E
CULG	13	0004	0005	0015	N07	W09	.156	14979	12.3	11	-N		C	0005	20	.2	
VORO	13	0006	0007	0015	N07	W10	.173	14979	12.3	9	-B		C	0007	116	1.1	E
GRP64850	13	0033+2	0036+1	0047	N06	W09	.156	14979	12.3	14	-N						
CULG	13	0033	0036	0050	N06	W09	.156	14979	12.3	17	-N		C	0036	35	.4	F
VORO	13	0035	0037	0043	N06	W09	.156	14979	12.3	8	-B		C	0037	108	1.1	E

14
Oct 77

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
GRP64851	13	0109+3	0110+0 0118+5	0126	N06	W12	.207	14979	12.1	17	-F				50	.5	K	
CULG	13	0109	0123	0140	N06	W11	.190	14979	12.2	31	-F		C	0123	40	.4		
PALE	13	0109	0110	0124	N05	W14	.241	14979	12.0	15	-F	3	V		45		FDE	
PALE	13	0109	0110	0124	N05	W14	.241	14979	12.0	15	-F	3	C		45		FDE	
VORO	13	0110	0120	0129	N07	W11	.190	14979	12.2	19	-B		C	0120	63	.6	DK	
MANI	13	0112	0118	0124	N05	W11	.191	14979	12.2	12	-F		P	0118	50	.5	F	
GRP64852	13	0747+0	0750+0	0753	N07	W19	.324	14979	11.9	6	-F						DHJ	
ABST	13	0747	0750	0752	N06	W20	.340	14979	11.8	5	-F		C	0750	87	1.0	DJ	
MONT	13	0747	0750	0753	N08	W18	.309	14979	12.0	6	-F		C	0750	20		DH	
853 ABST	13	0852	0853	0900	N05	W19	.325	14979	11.9	8	-F		C	0853	131	1.4	EJK	Y5
854 KANZ	13	0955	0958	1002	N22	E81	.983	14991	19.5	7	-N		C				D	Y5
GRP64855	13	1030+5	1035+2	1043	N22	E80	.980	14991	19.4	13	-N				50		D	
CATA	13	1030E	1035	1035D	N25	E78	.973	14991	19.3	5D	1B	1		1035	56			
KANZ	13	1033	1037	1043	N22	E80	.980	14991	19.4	10	-N		C					
ABST	13	1033E	1036	1046	N22	E88	.997	14991	20.0	13D	1F		P	1036	96		D	
MONT	13	1034	1036	1044	N22	E79	.977	14991	19.4	10	-N		C	1036	40			
MEUD	13	1034	1036	1043	N22	E78	.973	14991	19.3	9	-F		C	1036	30			
KHAR	13	1035	1035	1043	N23	E85	.993	14991	19.8	8	-F		C				D	
856 ZURI	13	1433	1435	1449	N06	W17	.291	14979	12.3	16	-F		C	1435	40	.4		Y5
	13	1638	1645	NO FLARE PATROL														
GRP64857	13	1706+5	1712+0	1807	N05	W22	.373	14979	12.1	61	-N				100	1.1		
MCMA	13	1706		1820	N05	W20	.341	14979	12.2	74	-B		P	1715	100	1.1	E	
PALE	13	1711	1712	1753	N05	W23	.389	14979	12.0	42	-N	3	V		99		FDE	
PALE	13	1711	1712	1753	N05	W23	.389	14979	12.0	42	-N	3	C		99		FDE	
PALE	13	1711	1712	1728D	N05	W23	.389	14979	12.0	17D	-N	3	V		99		FDE	
GRP64858	13	1844+1	1850+0	1955	N29	W14	.446	14990	12.7	71	-N				110	1.2	U	
MCMA	13	1844	1850	1927	N30	W14	.460	14990	12.7	43	-B		C	1850	100	1.1	EU	
PALE	13	1845	1850	1955	N29	W14	.446	14990	12.7	70	-N	3	V		135		FDE	
PALE	13	1845	1850	1955	N29	W14	.446	14990	12.7	70	-N	3	C		135		FDE	
HUAN	13	1847E		1857D	N29	W15	.454	14990	12.7	10D	-F	1	P	1847	80	.9	E	
	13	1939	1954	NO FLARE PATROL														
GRP64859	13	2224+2	2228+0	2242	N06	W24	.405	14979	12.1	18	-N				60	.7		
CULG	13	2224	2228	2248	N07	W22	.373	14979	12.3	24	-N		C	2228	40	.4		
PALE	13	2226	2228	2236	N05	W26	.437	14979	12.0	10	-N	3	V		77		FDE	
GRP64860	14	0123+0	0125+2	0158	N06	W26	.436	14979	12.1	35	-N				90	1.0		
CULG	14	0123	0127	0205	N07	W26	.436	14979	12.1	42	-N		C	0127	70	.8	F	
PALE	14	0123	0125	0150	N05	W27	.452	14979	12.0	27	-N	3	V		114		FDE	
GRP64861	14	0300+9	0303+7	0320	N06	W27	.452	14979	12.1	20	-N				60	.7	FJ	
CULG	14	0300	0308	0325D	N07	W28	.467	14979	12.0	25D	-N		C	0308	55	.6	F	
VORO	14	0302	0303	0320	N07	W25	.420	14979	12.3	18	1N		C	0303	206	2.3	J	
MANI	14	0304E	0306U	0315D	N06	W27	.452	14979	12.1	11D	-F		V	0306	50	.5	F	
PALE	14	0309	0310	0319	N05	W28	.468	14979	12.0	10	-N	3	V		68		FDE	
	14	0330	0331	NO FLARE PATROL														
862 CULG	14	0350	0403	0433	N07	W25	.420	14979	12.3	43	-F		C	0403	35	.4	F	Y5
GRP64863	14	0605>9	0640+3	0649	N07	W29	.482	14979	12.1	44	-F						DJK	
BUCA	14	0605		0627	N03	W28	.467	14979	12.2	22	-F		C	0610	86	1.0	D	
ABST	14	0625	0640	0649	N06	W30	.497	14979	12.0	24	-F		C	0640	175	2.0	DJK	
CULG	14	0637	0643U	0710D	N07	W28	.467	14979	12.2	330	-F		P	0643	30	.3	F	
864 ABST	14	0707	0708	0725	N07	W28	.467	14979	12.2	18	-F		C	0708	114	1.3	DJ	Y5
865 MONT	14	0804	0807	0831	N07	W30	.497	14979	12.1	27	-N		C	0807	80			Y5
GRP64866	14	0947+3	0956+1 1005	1016	N06	W28	.467	14979	12.3	29	-F						K	
MONT	14	0947	1005	1059	N07	W31	.512	14979	12.1	72	-N		C	1059	80		FK	
MEUD	14	0950	0956	1005	N06	W28	.467	14979	12.3	15	-F		C	0956	40	.4	E	
KHAR	14	0950	0957	1007	N06	W28	.467	14979	12.3	17	-F		C				D	
CATA	14	1015E	1020	1025D	N07	W27	.452	14979	12.4	10D	-N	2		1020	56	.6		
867 KANZ	14	1309	1309	1312	N07	W31	.512	14979	12.2	3	-N		C					Y5

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
868 KANZ	14	1411	1415	1419	N17	E01	.192	14993	14.7	8	-F		C				D	Y5
	14	1940	2243	NO FLARE PATROL														
	14	2248	2254	NO FLARE PATROL														
	14	2257	2307	NO FLARE PATROL														
	14	2315	2330	NO FLARE PATROL														
	14	2341	2358	NO FLARE PATROL														
	15	0015	0022	NO FLARE PATROL														
	15	0029	0034	NO FLARE PATROL														
	15	0135	0137	NO FLARE PATROL														
	15	0210	0217	NO FLARE PATROL														
	15	0224	0225	NO FLARE PATROL														
	15	0235	0244	NO FLARE PATROL														
GRP64869	15	1018+5	1022+1	1032	N18	W10	.268	14993	14.7	14	-F							
MONT	15	1018	1022	1029	N18	W10	.268	14993	14.7	11	-F		C	1022	40		E	
KHAR	15	1023	1023	1035	N19	W10	.281	14993	14.7	12	-F		C				D	
	15	1521	1700	NO FLARE PATROL														
	15	1810	1821	NO FLARE PATROL														
	15	1956	2120	NO FLARE PATPOL														
	15	2124	2132	NO FLARE PATROL														
	16	0252	0253	NO FLARE PATROL														
870 KANZ	16	1308		1402	N19	W27	.491	14993	14.5	54	-F		C				H	Y5
GRP64871	16	1427>9	1430 1448	1456	N19	W28	.504	14993	14.5	29	-F							
KANZ	16	1427	1430	1452	N20	W28	.510	14993	14.5	25	-F		C					
ZURI	16	1440	1448	1500	N19	W29	.518	14993	14.4	20	-F		C	1448	30	.4		
	16	1654	1716	NO FLARE PATROL														
	16	1918	2019	NO FLARE PATROL														
	16	2026	2035	NO FLARE PATROL														
GRP64872	16	2219+0	2220	2227	N23	E34	.602	14991	19.5	8	-N						E	
VORO	16	2219E		2226	N24	E35	.619	14991	19.6	70	-B		C	2220	108	1.3	E	
CULG	16	2219	2220	2227	N23	E34	.602	14991	19.5	8	-F		C	2220	20	.2		
873 VORO	16	2249	2251	2258	N25	E35	.624	14991	19.6	9	-B		C	2251	99	1.2	E	Y5
	17	1938	2018	NO FLARE PATROL														
874 VORO	18	0031	0032	0041	N19	W45	.717	14993	14.6	10	-N		C	0032	72	1.0	J	Y5
875 VORO	18	0103	0105	0110	S25	E46	.811	14995	21.5	7	-N		C	0105	99	1.6	DG	Y5
	18	0215	0234	NO FLARE PATROL														
876 CULG	18	0600	0622	0647	S23	E47	.810	14995	21.8	47	-F		C	0622	40	.6		Y5
GRP64877	18	0808+1	0811+1	0817	N25	W22	.479	14984	16.7	9	-F						E	
MONT	18	0808	0811	0818	N25	W23	.490	14984	16.6	10	-F		C	0811	40		E	
KANZ	18	0809	0812	0816	N25	W22	.479	14984	16.7	7	-F		C				E	
878 MCMA	18	1749E		1818D	N26	E16	.430	14991	19.9	29D	-N		C	1754	50	.6	E	Y5
	18	1818	2020	NO FLARE PATROL														
879 CULG	18	2024	2027	2038	S22	E40	.742	14995	21.9	14	-F		C	2027	15	.2		Y5
GRP64880	19	0036+7	0040+5	0056	N23	E07	.320	14991	19.5	20	-F						EJ	
CULG	19	0036	0040	0045D	N23	E07	.320	14991	19.6	9D	-F		C	0040	35	.4		
VORO	19	0043	0045	0056	N24	E08	.341	14991	19.6	13	-N		C	0045	116	1.2	EJ	
881 CULG	19	0108	0139	0301D	S28	E27	.676	14995	21.1	130	?F		C	0139	240	3.1	SF	Y5
	IMP.	1 NO	VORO2	MITK1														
GRP64882	19	0216+1	0218+1	0228	N21	W33	.581	14984	16.6	12	-F				45	.6	E	
CULG	19	0216	0219	0230	N22	W32	.574	14984	16.7	14	-F		C	0219	40	.5		
MITK	19	0217	0218	0226	N21	W35	.605	14984	16.5	9	-F		C	0218	50	.7	E	
883 CULG	19	0541	0545	0607	S24	E28	.646	14995	21.3	26	-F		C	0545	30	.4		Y5
GRP64884	19	0719+1	0720	0742	S25	E28	.655	14995	21.4	23	-F				30	.4	D	
HTPR	19	0719E	0720	0738	S25	E27	.647	14995	21.3	19D	-F		C	0720	20	.2		
BUCA	19	0720		0745	S25	E29	.664	14995	21.5	25	-N		C	0725	43	.6	D	

Hα SOLAR FLARES

OCTOBER, 1977

OBSERVATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	REMARKS
GRP64885	19	1105	1114	1159	N20	W66	.910	14993	14.5	54	-N						E
LVOV	19	1105	1114	1159	N20	W68	.923	14993	14.4	54	-F		C	1114	100		E
CATA	19	1130E	1130	1145D	N20	W65	.904	14993	14.6	15D	-E	2		1130	73	1.8	
886 LVOV	19	1156	1202	1215	S25	E26	.638	14995	21.4	19	-F		C	1202	150	2.0	D Y5
887 ZURI	19	1442	1456	1506	N21	W42	.688	14984	16.5	24	-F		C	1456	40	.6	Y5
888 ZURI	19	1512	1512	1516	S25	E25	.630	14995	21.5	4	-N		C	1517	60	.8	Y5
	19	1556	1638	NO FLARE PATROL													
	19	1639	1745	NO FLARE PATROL													
	19	1757	1808	NO FLARE PATROL													
	19	1904	1928	NO FLARE PATROL													
	19	2203	2212	NO FLARE PATROL													
GRP64889	19	2212	2230	2310	S26	E16	.576	14995	21.1	58	-N						
			2242														
CULG	19	2212	2230	2322D	S27	E17	.595	14995	21.2	70D	-N		C	2230	140	1.8	
PALE	19	2219E	2242	2258	S26	E15	.570	14995	21.1	39D	-N	3	V		137		
	19	2321	2332	NO FLARE PATROL													
GRP64890	20	0032E	0035+1	0058	N23	W44	.718	14984	16.7	26	-F				30	.4	
PALE	20	0032E	0036	0058	N24	W44	.721	14984	16.7	26D	-F	3	V		32		DE
MANI	20	0035E	0035U	0055D	N23	W45	.728	14984	16.6	20D	-F		V	0035	25	.3	
891 CULG	20	0224	0232	0242	S26	E16	.575	14995	21.3	18	-F		C	0232	20	.2	Y5
892 MITK	20	0617	0629	0644	N22	W52	.797	14984	16.4	27	-N		C	0629	50	.8	D Y5
893 ZURI	20	1352E	1358	1400D	N20	W69	.930	14984	15.4	8D	-N		P	1358	50		Y5
894 CATA	20	1405E	1405	1425	N21	W70	.936	14984	15.3	20D	-B	2		1405	56		Y5
895 ZURI	20	1444	1446	1450	N23	W66	.912	14984	15.7	6	-N		C	1446	40		Y5
GRP64896	20	1541+2	1554	1700	S26	E04	.526	14995	21.0	79	1B				200	2.3	KLU
			1605														
MCMA	20	1541	1554	1700	S26	E04	.526	14995	21.0	79	1B						
MCMA	20	1541	1605	1700	S26	E04	.526	14995	21.0	79	1B		C	1554	225	2.7	KLU
MEUD	20	1543		1551D	S26	E05	.528	14995	21.0	8D	1N		C	1551	18	2.1	U
	20	1734	1741	NO FLARE PATROL													
	20	1946	2035	NO FLARE PATROL													
	20	2204	2220	NO FLARE PATROL													
GRP64897	21	0048+2	0052+1	0059	N25	W20	.460	14991	19.5	11	-N						J
VORO	21	0048	0053	0058	N26.	W22	.491	14991	19.4	10	-N		C	0053	134	1.5	J
CULG	21	0050	0052	0100	N25	W19	.450	14991	19.6	10	-N		C	0052	20	.2	
898 CULG	21	0141	0146	0157	N21	W70	.936	14984	15.8	16	-F		C	0146	30		Y5
899 KANZ	21	0713	0750	0757	N20	W88	.998	14984	14.7	44	-F		C				Y5
GRP64900	21	0813+3	0834+3	0932	S25	W07	.518	14995	20.8	79	-N				110	1.3	EI
			0845														
MONT	21	0813	0834	0933	S24	W04	.495	14995	21.0	80	-N		C	0834	80		E
KANZ	21	0816	0837	0928	S25	W06	.515	14995	20.9	72	-N		C				E
CATA	21	0830E	0845	0935	S25	W08	.521	14995	20.8	65D	-B	2		0845	84	1.0	
KHAR	21	0830E	0835	0930	S24	W07	.503	14995	20.8	60D	-F		C	0835	110	1.3	E
KIEV	21	0839E	0839	0936D	S26	W08	.535	14995	20.8	57D	1F		C	0839	200	2.5	BEI
ATHN	21	0904E	0907	0922	S24	E01	.491	14995	21.5	18D	-N	1			80	.8	
GRP64901	21	0948+3	0950+1	1005	S26	W07	.532	14995	20.9	17	-F				25	.3	
MONT	21	0948	0951	1009	S26	W07	.532	14995	20.9	21	-F		C	0951	20		D
MEUD	21	0949	0950	1005	S26	W08	.535	14995	20.8	16	-F		C	0950	30	.3	
KANZ	21	0951	0951	1005	S26	W07	.532	14995	20.9	14	-N		C				E
902 KHAR	21	0950	0950	0957	N22	W89	.999	14984	14.7	7	-F		C				DT Y5
GRP64903	21	1030+1	1043+1	1051	N21	W89	.999	14984	14.8	21	-F						D
KHAR	21	1030	1043	1050	N22	W89	.999	14984	14.8	20	-F		C				DT
KANZ	21	1031	1044	1051	N20	W90	.999	14984	14.7	20	-N		C				

Hα SOLAR FLARES

OCTOBER 1977

OBSERVATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	DURATION MIN.	IMPORTANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	REMARKS
GRP64904	21	1127+0	1127+3	1135	N21	W87	.997	14984	15.0	8	-F						D
KANZ	21	1127	1130	1137	N20	W85	.993	14984	15.1	10	-F		C				
KHAR	21	1127	1127	1133	N22	W89	.999	14984	14.8	6	-F		C				DT
GRP64905	21	1239+1	1240+4	1248	S27	W06	.544	14995	21.1	9	-F				50	.6	E
MONT	21	1239	1244	1248	S27	W06	.544	14995	21.1	9	-F		C	1244	40		E
KANZ	21	1240	1243	1246	S27	W06	.544	14995	21.1	6	-F		C				
CATA	21	1240	1240	1305	S26	W06	.529	14995	21.1	25	-N	1		1240	67	.8	
MEUD	21	1240	1244	1248	S27	W07	.546	14995	21.0	8	-F		C	1244	50	.6	E
GRP64906	21	1505+2	1508+1	1518	S25	W09	.525	14995	21.0	13	-F				50	.6	E
MCMA	21	1505	1508	1520	S25	W09	.525	14995	21.0	15	-N		C	1508	45	.5	E
MEUD	21	1507	1509	1516	S26	W09	.539	14995	21.0	9	-F		C	1509	50	.6	E
907 MCMA	21	1536	1555	1640	S26	W09	.539	14995	21.0	64	-N		C	1555	75	.9	EL Y5
	21	1946	2015	NO FLARE PATROL													
908 CULG	21	2125	2145	2255	S25	W15	.555	14995	20.8	90	-N		C	2145	160	1.9	SF Y5
GRP64909	21	2127E	2143+0	2148D	N29	W14	.455	14996	20.8	21	-N				40	.5	Z
PALE	21	2127E	2143U	2148D	N29	W14	.455	14996	20.8	21D	-N	3	C		39		DE
PALE	21	2127E	2143U	2148D	N29	W14	.455	14996	20.8	21D	-N	3	V		39		DE Z
GRP64910	22	0050+3	0054+1	0103	N22	W78	.974	14984	16.2	13	-N						DJ
CULG	22	0050	0055	0103	N21	W78	.974	14984	16.2	13	-N		C	0050	20		
MITK	22	0052	0055	0105	N23	W77	.970	14984	16.3	13	-N		C	0055	50		D
VORO	22	0053	0054	0100	N23	W78	.974	14984	16.2	7	-N		C	0054	90	1.9	J
GRP64911	22	0406+1	0410+2	0425	N21	W77	.970	14984	16.4	19	1N				90		
CULG	22	0406	0410	0427	N20	W78	.974	14984	16.3	21	1N		C	0410	60		
MITK	22	0407	0412	0422	N22	W79	.977	14984	16.2	15	1B		C	0412	130		
MANI	22	0410E	0412U	0416D	N20	W75	.962	14984	16.5	6D	-N		V	0412	80	1.9	
GRP64912	22	0514+3	0518+1	0532	N22	W34	.600	14991	19.7	18	-F						EG
CULG	22	0514	0519	0526	N18	W37	.620	14991	19.4	12	-F		C	0519	20	.2	
MITK	22	0517	0518	0537	N26	W32	.600	14991	19.8	20	-N		C	0518	60	.8	EG
GRP64913	22	0850+2	0852+1	0905	N23	W78	.974	14984	16.5	15	-N				60		E
MONT	22	0850	0853	0900D	N23	W79	.977	14984	16.4	10D	1N		C	0853	220		
ZURI	22	0850	0852	0858	N23	W76	.966	14984	16.7	8	-B		C	0852	60		
BUCA	22	0850		0912	N22	W80	.981	14984	16.4	22	-N		C	0856	64		E
KANZ	22	0852	0852	0910	N23	W78	.974	14984	16.5	18	-N		C				
914 KANZ	22	0907	0910	0913	N18	E90	1.000	15006	29.1	6	-F		C				Y5
GRP64915	22	1048+0	1051+1	1101	S26	W19	.593	14995	21.0	13	-F						E
MONT	22	1048	1052	1100	S26	W19	.593	14995	21.0	12	-N		C	1052	80		E
KANZ	22	1048	1051	1101	S26	W19	.593	14995	21.0	13	-F		C				
916 CATA	22	1130	1130	1145D	S29	W17	.616	14995	21.2	15D	-N	2		1130	28	.4	Y5
917 LVOV	22	1213	1216	1304	S27	W18	.598	14995	21.2	51	?F		C	1216	200	2.6	Y5
	IMP,1 NO ; CATA1																
	22	1527	1735	NO FLARE PATROL													
	22	1745	2045	NO FLARE PATROL													
	22	2104	2115	NO FLARE PATROL													
918 CULG	22	2346	2352	2357	N23	W90	.999	14984	16.2	11	-N		C	2352	25		Y5
GRP64919	23	0028+9	0040	0047D	N24	W44	.722	14991	19.7	19	-N						G
CULG	23	0028	0057U	0145	N25	W43	.715	14991	19.8	77	-N		C	0057	100	1.5	F
VORO	23	0037	0040	0047	N23	W45	.730	14991	19.7	10	-B		C	0045	125	1.8	EG
	23	0314	0329	NO FLARE PATROL													
	23	0335	0342	NO FLARE PATROL													
	23	0443	0448	NO FLARE PATROL													
	23	0450	0509	NO FLARE PATROL													
	23	0513	0522	NO FLARE PATROL													
	23	0525	0700	NO FLARE PATROL													
GRP64920	23	1140+5	1143+2	1155	S27	W23	.632	14995	21.8	15	-F				100	1.3	
CATA	23	1140	1145	1210	S27	W22	.624	14995	21.8	30	-N	2		1145	112	1.5	
KHAR	23	1143	1143	1150	S27	W24	.639	14995	21.7	7	-F		C	1143	90	1.2	
KANZ	23	1145	1145	1155	S26	W24	.629	14995	21.7	10	-F		C				

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	DURA-TION MIN.	IMPOR-TANCE	OBS. COND	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	REMARKS
921 KANZ	23	1207	1211	1231	S24	E16	.547	15005	24.7	24	-N		C				Y5
GRP64922	23	1243+7	1250+0	1305	N30	E87	.996	15008	30.1	22	-B						
KANZ	23	1243	1250	1305	N33	E85	.992	15008	29.9	22	-B		C				
CATA	23	1250	1250	1305	N28	E90	.999	15008	30.3	15	1N	2		1250	84		
	23	1430	1445	NO FLARE PATROL													
	23	1450	1704	NO FLARE PATROL													
	23	1905	2050	NO FLARE PATROL													
	23	2132	2147	NO FLARE PATROL													
	23	2209	2215	NO FLARE PATROL													
923 MITK	23	2336	2338	2346	N18	E63	.889	15006	28.7	10	-N		C	2338	50	1.1	DG Y5
924 VORO	24	0038	0039	0041	N17	E62	.881	15006	28.7	3	-F		C	0039	72	1.5	DG Y5
GRP64925	24	1428+3	1433+0	1459	S24	W43	.778	14995	21.4	31	-N				45	.7	E
MCMA	24	1428	1433	1500	S25	W44	.791	14995	21.3	32	-N		C	1433	45	.8	E
ZURI	24	1431	1433	1457	S24	W43	.778	14995	21.4	26	-N		C	1433	40	.7	
926 MCMA	24	1535	1537	1550	S25	W44	.791	14995	21.3	15	-F		C	1537	20	.3	D Y5
927 MCMA	24	1650	1653	1707	S25	W44	.791	14995	21.4	17	-F		C	1653	15	.2	D Y5
	24	2106	2215	NO FLARE PATROL													
	25	0100	0144	NO FLARE PATROL													
	25	0147	0156	NO FLARE PATROL													
	25	1435	1445	NO FLARE PATROL													
928 VORO	25	2348	2352	0000	S18	E42	.736	15011	29.1	12	-F		C	2352	54	.8	EGJ Y5
	26	0241	0242	NO FLARE PATROL													
	26	0325	0343	NO FLARE PATROL													
929 KANZ	26	1153	1153	1203	N20	E40	.665	15009	29.5	10	-F		C				Y5
	26	1602	1914	NO FLARE PATROL													
	26	1918	1927	NO FLARE PATROL													
GRP64930	26	1934E	1934	1941	N21	E44	.714	15009	30.1	7	-F				30	.4	F
PALE	26	1934E	1934	1941	N21	E44	.714	15009	30.1	7D	-F	3	C		31		F
PALE	26	1934E	1934	1941	N21	E44	.714	15009	30.1	7D	-F	3	V		31		F
	26	1945	2020	NO FLARE PATROL													
	26	2206	2214	NO FLARE PATROL													
931 MITK	27	0209	0212	0231	N21	E43	.703	15009	30.3	22	-N		C	0212	80	1.1	DG Y5
932 MITK	27	0507	0517	0530	N19.	W33	.576	15015	24.7	23	-N		C	0517	60	.8	DG Y5
933 PALE	27	2338	2338	2341	N22	E61	.877	15013	1.6	3	-F	3	V		19		DE Y5
GRP64934	28	0042	0046	0100	N21	E24	.475	15009	29.8	18	-N						
PALE	28	0042	0046	0058	N21	E24	.475	15009	29.8	16	-N	3	V		101		FDE
CULG	28	0050E	0050E	0101	N21	E24	.475	15009	29.8	11D	-N		P	0050	20	.2	
935 CULG	28	0304	0317	0345	N20	E23	.455	15009	29.9	41	-F		C	0317	30	.3	Y5
936 CULG	28	0355	0400	0417	S29	E90	1.001	15016	3.9	22	1N		C	0400	100		Y5
937 CULG	28	0530	0538	0550	N21	E25	.488	15009	30.1	20	-F		C	0538	35	.4	F Y5
GRP64938	28	0722+8	0730+2	0735D	N21	W49	.768	15015	24.6	13	-N				45	.7	
CULG	28	0722	0732D	0732D	N22	W48	.760	15015	24.7	100	-N		P	0732	30	.8	
CATA	28	0730	0730	0735D	N20	W50	.776	15015	24.6	5D	-N	2		0730	56	.9	
GRP64939	28	0915+1	0915 0940+1	0950	S26	E84	.998	15083	4.7	35	-N						
CATA	28	0915E	0915	0925	S28	E90	1.001	15083	4.1	10D	1N	2		0915	56		
KANZ	28	0916	0941	0949	S25	E84	.998	15083	3.7	33	-N		C				
CATA	28	0935	0940	0950	S28	E80	.994	15083	3.4	15	1F	2		0940	112		

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
GRP64940	28	1203+2	1218+1 1225+8	1244	S24	E80	.992	15016	4.5	41	1N						EH
KANZ	28	1203	1233	1246	S25	E80	.993	15016	3.5	43	1N		C				
LVOV	28	1204		1254	S23	E90	1.001	15016	4.3	50			P				CH
RAMY	28	1205	1225	1245D	S21	E80	.991	15016	3.5	40D	1N	4	C				DE H
RAMY	28	1205	1218	1245D	S21	E80	.991	15016	3.5	40D	-B	4	C				DE H
CATA	28	1215	1230	1240D	S27	E75	.981	15016	3.1	25D	2N	2		1230	337		
HTPR	28	1218	1219	1221	S25	E82	.996	15016	3.7	3	-F		C	1219	10	.2	
GRP64941	28	1425+1	1429+4	1440	S25	E80	.993	15016	4.6	15	-F						K
HTPR	28	1425	1429	1440	S25	E81	.994	15016	3.7	15	-F		C	1429	30	.6	K
KANZ	28	1426	1433	1440	S26	E80	.993	15016	3.6	14	-F		C				
	28	1557	1636	NO FLARE PATROL													
	28	1709	1726	NO FLARE PATROL													
	28	1945	2027	NO FLARE PATROL													
942 CULG	28	2206	2213	2245	N20	E20	.418	15009	30.4	39	-F		C	2213	15	.2	Y5
	28	2220	2229	NO FLARE PATROL													
943 CULG	28	2234	2305U	2353	S28	E80	.994	15016	3.9	79	1F		C	2305	70		Y5
944 CULG	29	0157E	0158	0209	N22	E11	.347	15009	29.9	120	-N		P	0158	10	.1	Y5
945 MITK	29	0204	0208	0220	S23	E70	.959	15016	3.3	16	?N		C	0208	80		Y5
	IMP.1 NO ‡ PALE2 CULG2																
946 CULG	29	0214	0219	0238	N18	E15	.339	15009	30.2	24	-F		C	0219	15	.2	Y5
947 MITK	29	0358	0407	0412D	S23	E69	.955	15016	3.3	14D	1N		C	0407	80		Y5
	29	0412	0415	NO FLARE PATROL													
948 CULG	29	0446	0450	0522	N20	E15	.361	15009	30.3	36	-F		C	0450	20	.2	Y5
949 CULG	29	0521	0524	0555	N21	E13	.352	15009	30.2	34	-N		C	0524	30	.3	Y5
950 CULG	29	0721	0732	0742D	N18	E90	1.000	15017	5.1	21D	-N		P	0732	25		Y5
951 CATA	29	0725E	0730	0730D	S18	E90	1.000		5.1	5D	-N	2		0730	28		T Y5
952 CATA	29	0745E	0745	0930D	S18	E90	1.000		5.1	105D	?N	2		0745	56		T Y5
	IMP.1 NO ‡ HTPR																
GRP64953	29	0820>9	0820 0835	0915D	N20	E90	1.000	15017	6.1	55	-F						D
MONT	29	0820E	0820	1012	N20	E90	1.000	15017	5.1	112D	-F		C	0820	20		D
HTPR	29	0831	0835	0842	N20	E90	1.000	15017	5.1	11	-F		C	0835	20		
HTPR	29	0849	0900	0915	N20	E90	1.000	15017	5.1	26	-F		C	0900	10		
954 WEND	29	0914E		0928	S22	E62	.915	15017	3.0	14D	-N						Y5
955 HTPR	29	1005	1008	1020	S25	E65	.938	15016	3.3	15	-F		C	1008	30	.6	Y5
GRP64956	29	1400E	1400	1430	S24	E63	.925	15016	4.3	30	-B						E
CATA	29	1400E	1400	1425D	S24	E63	.925	15016	3.3	25D	1B	2		1400	84		
HTPR	29	1405E		1430	S25	E63	.927	15016	3.3	25D	-F		C	1408	50	1.0	E
957 HTPR	29	1519		1537D	N30	E06	.437	15008	30.1	18D	-F		C	1521	40	.4	Y5
	29	1630	2040	NO FLARE PATROL													
958 PALE	29	2009E	2009	2021	S23	E63	.923	15016	3.6	12D	-N	3	C		84		FDE Y5
GRP64959	29	2040+5	2049+1	2107	S25	E65	.938	15016	4.7	27	-N				60		
CULG	29	2040E	2050U	2115	S27	E68	.955	15016	4.0	35D	-N		P	2050	60	1.5	
PALE	29	2045	2049	2058	S23	E63	.923	15016	3.6	13	-N	3	C		67		FDE
	29	2043	2049	NO FLARE PATROL													
960 CULG	29	2103	2114	2130	N22	E02	.299	15009	30.0	21	-F		C	2114	70	.8	F Y5
	29	2140	2208	NO FLARE PATROL													
	29	2209	2215	NO FLARE PATROL													
	29	2219	2228	NO FLARE PATROL													
	29	2232	0033	NO FLARE PATROL													

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	DATE OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND	OBS. TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	REMARKS
961 CULG	29	2349	2353	0012	S18	E02	.387		30.1	23	-F		C	2353	15	.2	Y5
	30	0105	0235	NO FLARE PATROL													
GRP64962	30	0223+0	0225+0	0230	N21	W01	.283	15009	30.0	7	-F				60	.6	F
PALE	30	0223	0225	0230	N21	W01	.283	15009	30.0	7	-F	3	C		57		F
PALE	30	0223	0225	0230	N21	W01	.283	15009	30.0	7	-F	3	V		57		F
	30	0320	0325	NO FLARE PATROL													
	30	0330	0359	NO FLARE PATROL													
	30	0706	0715	NO FLARE PATROL													
	30	0722	0725	NO FLARE PATROL													
963 HTPR	30	1154	1202	1240	S18	W22	.520	15018	28.8	46	-F		C	1202	10	.1	Y5
964 ZURI	30	1322	1323	1324	N20	W80	.982	15015	24.6	2	-F		C	1323	20		Y5
GRP64965	30	1327+2	1328+1	1333	N18	E70	.937	15017	5.8	6	-N				50		
HTPR	30	1327	1328	1331	N19	E69	.931	15017	4.7	4	-N		C	1328	60	1.3	
ZURI	30	1329	1329	1335	N18	E71	.943	15017	4.9	6	-B		C	1329	50		
	30	1600	1621	NO FLARE PATROL													
	30	1625	1636	NO FLARE PATROL													
	30	1646	1718	NO FLARE PATROL													
966 PALE	30	1733	1734	1738	N19	E69	.931	15017	4.9	5	-F	3	C		46		HOE Y5
967 MITK	31	0132	0142	0221	N17	W90	1.000	15015	24.3	49	?N		C	0142	60		G Y5
	IMP.1 NO # CULG2																
968 CULG	31	0340	0344	0352	N28	E85	.994		6.5	12	-F		C	0344	25		Y5
969 MITK	31	0411	0417	0430	N20	E70	.938	15017	5.4	19	-N		C	0417	80		H Y5
970 MITK	31	0437	0440	0456	S28	W90	1.001	15005	24.4	19	?N		C	0440	90		G Y5
	IMP.1 NO # CULG2																
971 CULG	31	0508	0515	0525	N29	E80	.982		6.2	17	-F		C	0515	20		Y5
972 KHAR	31	0840E	0847	0917	N21	W90	1.000	15015	24.6	37D	-F		C				DT Y5
GRP64973	31	1043>9	1050 1100	1110	N21	W90	1.000	15015	24.7	27	-F						D
KHAR	31	1043	1050	1117	N21	W90	1.000	15015	24.7	34	1F		C				DT
KANZ	31	1057	1100	1102	N21	W90	1.000	15015	24.7	5	-F		C				D
GRP64974	31	1145	1150	1205	N21	W90	1.000	15015	24.7	20	-F						D
KHAR	31	1145	1150	1205	N21	W90	1.000	15015	24.7	20	-F		C				DT
KHAR	31	1145	1150	1205	N21	W90	1.000	15015	24.7	20	-F		C				DT
	31	1600	1654	NO FLARE PATROL													
	31	1943	2024	NO FLARE PATROL													
	31	2035	2043	NO FLARE PATROL													
	31	2053	2110	NO FLARE PATROL													
	31	2131	2133	NO FLARE PATROL													

"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

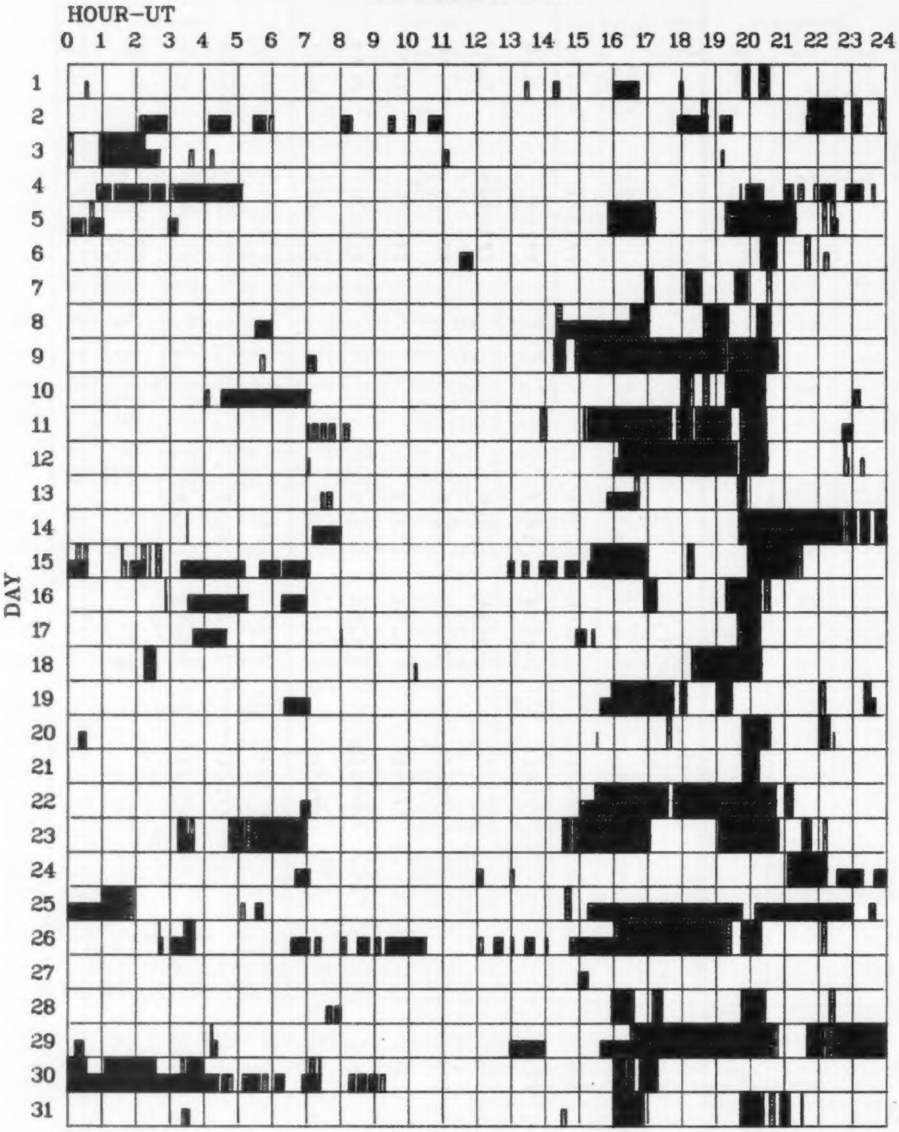
DAILY FLARE INDICES
Includes all Flares

OCTOBER 1977

Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
771001	15.92	23.5	771011	24.00	19.1	771021	24.55	23.5
771002	7.18	22.5	771012	141.38	19.7	771022	23.19	18.7
771003	38.81	22.6	771013	43.44	23.6	771023	15.37	16.9
771004	19.63	24.0	771014	37.24	20.1	771024	5.94	22.9
771005	23.68	20.3	771015	5.91	20.1	771025	1.94	23.0
771006	40.95	23.4	771016	13.58	22.5	771026	2.79	19.6
771007	31.71	22.8	771017	0.00	23.3	771027	6.12	24.0
771008	24.70	22.2	771018	17.38	21.7	771028	28.36	22.2
771009	20.69	17.8	771019	24.29	21.3	771029	64.36	17.0
771010	10.46	22.4	771020	29.40	22.8	771030	8.55	20.7
						771031	5.35	22.0

When no Flare Index is given, it is 0 for that day.

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE
OCTOBER 1977



Observatories included in total patrol:

Abastumani, Athenes, Bucharest, Catania, Culgoora, Haute Provence, Herstmonceux, Huancayo, Istanboul, Kandilli, Kanzelhohe, Kharkov, Kiev, Kodaikanal, Locarno, Lvov, Manila, McMath-Hulbert, Meudon, Mitaka, Monte Mario, Palehua, Ramey, Tashkent, Tehran, Upice, Voroshilov, Wendelstein, Zürich

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
1	200 GORK	44 NS	0500 E		480		5		
	9100 ARCE	20	0828.5	0936.8	134				
	9100 GORK	5 S	0921.4	0921.7	.4	24	12		
	9100 GORK	2 SF	0925	0925.5	2	7	3		
	9100 GORK	20 GRF	0933.7	0936.4	12.6	8	2.4		
	9100 GORK	2 SF	1022.2	1023	6.8	8	2		
	1420 ARCE	22	1053.3	1056.8	12				
	4995 ATHN	2 GRF	1146.6	1149.8	6.3	7	4.2		
	9100 ARCE	1	1148.9	1149.9	11.4				
	9100 ARCE	22	1305	1357.8	105				
	2800 OTTA	20 GRF	1500	1600	160	1.8	.9		
	245 SGMR	43 NS	2115.9	2141.4	65.1D	26.5			
2	1000 TYKW	5 S	0202.8	0203	.5	12	3		OR
	1000 TYKW	5 S	0312	0312.2	.5	7	1.5		8R
	9400 TYKW	5 S	0436	0436.7	2	8	3		
	200 GORK	44 NS	0500 E		240		5		
	260 ONDR	44 NS	0700 E		490 D	14			
	245 SGMR	44 NS	1045 E	2022.8	694 D	52.5			
	200 HIRA	44 NS	2035 E	0150	720 D	20	5		SL
	3100 CRIM	24 R	0535 U	0625		2			
	536 ONDR	42 SER	0841.2	0850	12	81			
	808 ONDR	42 SER	0843.3	0852.2	9	20	2.2		
	9100 ARCE	4	0900	0901.6	3				
	1420 ARCE	40	0940.1		17.5				
	9100 ARCE		0948.6	0948.8	1.3				
	9100 ARCE	46	0946.6	0948.8	2.8				
	9100 ARCE		0949.9	0950	1.5				
	1420 ARCE	2	1017.7	1017.9	.6				
	930 BORD	3 S	1018	1018	1	30	2		
	1420 ARCE	40	1027	1035.4	16.5				
	9100 ARCE	8	1028	1028.1	.5				
	9100 ARCE		1112	1113.6	1.8				
	9100 ARCE	46	1112	1113.6	7				
	9100 ARCE		1113.8	1114.4	1.5				
	9100 ARCE		1115.3	1115.5	3.7				
	808 ONDR	4 S/F	1122	1122	.4	45			
	245 SGMR	6 S	1548.6	1550.2	2.8	129.8	38.9		
	606 SGMR	3 S	1549.4	1549.5	.6	12.5	3.8		
	410 SGMR	6 S	1549.6	1550.2	.7	108.3	32.5		
	1420 ARCE	40	1556.1	1604.5	10				AT SUNSET
	9100 ARCE	4	1559.7	1600.8	2.9				
	9100 ARCE	29	1602.6		20				AT SUNSET
	245 SGMR	6 S	1604.5	1605.3	2.3	224.3	67.3		
	410 SGMR	6 S	1605.1	1605.4	1.3	121.4	36.4		
	606 SGMR	1 S	1605.2	1606.2	1.4	9.1	2.7		
	18 MCMA	6 S	1636	1638	3			1	
	245 SGMR	6 S	2121.6	2131.4	12.2	74.9	22.5		
	1420 BOUL	3 S	2122.5	2123.5	2	10	3		
	410 SGMR	6 S	2128.5	2128.7	1.9	13.7	5		
	1415 SGMR	3 S	2128.5	2128.8	2.5	14.9	4.5		
	2800 OTTA	2 S/F	2128	2129.5	6	3.2	1.6		
	2695 BOUL	3 S	2129.5	2130.5	2.5	4	1		
3	208 VORO	44 NS	0100		60		16		
	100 HIRA	43 NS	0330	0547	300 D	80	10		SL
	100 GORK	44 NS	0457 E		180		20		
	200 GORK	44 NS	0500 E		300		5		
	260 ONDR	44 NS	0740 E		450 D	118	10		
	202 IZMI	43 NS	1039.2		80.8	50			
	245 SGMR	44 NS	1047 E	1205.3	690 D	286.9			
	228 HARS	43 NS	1136	1315	300 D	35 U			
	200 HIRA	44 NS	2040 E	2315	260 D	15	3		SL
	208 VORO	44 NS	2220	2318	220	30	11		
	3100 CRIM	24 R	0728	0745		2			
	237 TRST	41 F	0740.3	0740.5	.7	132			L
	1000 TYKW	5 S	0740.4	0740.8	1	12	2		20L
	2000 TYKW	5 S	0740.4	0740.7	1	3.5	1		0R
	1470 BERL	3 S	0740	0740.5	1	7.3			
	536 ONDR	45 C	0740 E	0740.8	6	31	1.6		
	228 HARS	45 C	1206.3	1206.5	1.2	250	90		
	2800 OTTA	20 GRF	1440	1515	70	1	.5		
	2800 OTTA	21 GRF	1615	1725	105	1.4	.7		
	2800 OTTA	8 S	1716	1716.2	.5	3.6			
	700 SYDN	45 C	2245.2	2247	2.4				
	1000 TYKW	45 C	2245	2246.6	2.5	7	1.5		0R
	1400 SYDN	2 S	2246.3	2246.4	.9				
	2000 TYKW	5 S	2246	2246.5	1	1.5	.5		0R
	200 HIRA	27 RF	2250	2316	56	17	5		
	200 HIRA	45 C	2307	2310	7	17	8		
4	3750 TYKW	5 S	0131.5	0132.2	2.5	1.5	.5		
	2000 TYKW	5 S	0132	0132.3	2	2	.6		60L
	1000 TYKW	45 C	0132	0132.8	1.5	1.6	.4		20L

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	606 MANI	4	0432.2	0434.6	5.4	18.5	6.7		
	2695 MANI	4	0432.4	0435	3.6	14.9	6		
	4995 MANI	4	0432.7	0435	4	10.6	2.7		
	1415 MANI	4	0432.9	0435.1	4.1	11.4	5.2		
	700 SYDN	40 F	0433	0435.8	4.2				
	500 HIRA	45 C	0433.6	0435.7	3	260	50		WR
	3750 TYKW	5 S	0433	0435.4	4	11	4		OL
	3750 TYKW	29 PBI	0437		25	2	1		
	1000 TYKW	45 C	0433	0435.6	4	19	3		COMPLEX POL
	2000 TYKW	5 S	0433	0435.8	4	24	6		10R
	2000 TYKW	29 PBI	0437		20	1.4	.6		
	1400 SYDN	40 F	0434	0435.8	3				
	200 GORK	44 NS	0503 E		87		5		
	200 GORK	6 S	0504.6	0505 U	.7	20			
	260 ONDR	44 NS	0700 E		490 D	14			
	200 GORK	44 NS	0900 E		90		5		
	9100 ARCE	40	0750.8	0750.8					AT SUNRISE
	9100 ARCE	46	0858.6	0901.5	20.5				
	9100 ARCE		0858.6	0901.5	6.9				
	9100 ARCE		0905.5	0909	13.6				
	1420 ARCE	40	0909.6		8.5				
	930 BORD	8 S	1159.8	1159.8	.1	19	1		
	2800 OTTA	1 S	1613	1614.5	7	.8	.4		
	208 VORO	27 RF	2312.5	2337.5	43	22			
	200 HIRA	27 RF	2329	2338	25	15	.7		
	100 HIRA	27 RF	2330	0030	130	80	30		WLMR
	500 HIRA	45 C	2332	2333.3	18	8	3		WR
5	3750 TYKW	5 S	0331.5	0332.6	6	4	1.2		064102F
	200 GORK	44 NS	0500 E		320		15		
	202 IZMI	43 NS	0600		360	60			
	260 ONDR	44 NS	0730 E		457 D	57	9		
	127 TORN	44 NS	0730 E	1026.5	430 D	16			V=1
	100 GORK	43 NS	0842		78		5		
	245 SGMR	44 NS	1049 E	1624.7	685 D	118.3			3G
	200 HIRA	44 NS	2040 E	2350	290 D	10	3		SL
	208 VORO	44 NS	2200		360		12		
	100 GORK	41 F	0612	0615	54	56			
	100 GORK		0612	0625.3		56			
	100 GORK		0612	0649		56			
	100 GORK		0612	0658.4		56			
	3100 CRIM	24 R	0620 U	0920		4			
	9100 ARCE	20	0916.2	0933.5	22				
	1420 ARCE	1	0932.9	0933.3	.6				
	9100 ARCE	20	1112	1129.9	29.5				
	9500 BERL	4 S/F	1319.5	1320.1	56	157			
	9100 ARCE	3	1319.8	1321.2	4				
	4995 ATHN	4 S/F	1319.8	1321.2	6.6	20.4	6.1		
	4995 SGMR	3 S	1320	1321.1	22.4	239.8	71.9		
	8800 SGMR	3 S	1320	1321.1	19.6	149	44.7		
	3000 BERL	4 S/F	1320	1320.5	55	87			
	1470 BERL	42 SER	1320	1333.5	75	23			
	2695 SGMR	3 S	1320.5	1321.2	18.3	73.1	21.9		
	15400 SGMR	3 S	1320.6	1321.1	2.3	46.8	14		
	1420 ARCE	1	1320.7	1321.2	1.5				
	1415 SGMR	3 S	1320.9	1333.9	19.4	31	9.3		
	410 SGMR	6 S	1320.9	1333	18.3	13.6	4.1		
	2800 OTTA	3 S	1320	1321.1	2.5	77	19.2		
	2800 OTTA	30 PBI	1322.5	1322.5	100	7			
	4995 BOUL	8 S	1320	1321	2	209	68		
	2695 BOUL	8 S	1321	1322.5	3.5	54	18		
	9100 ARCE	20	1332.4	1334.8	22.8				
	1420 BOUL	8 S	1332.5	1333.5	2.5	10	3		
	1420 ARCE	4	1332.6	1333.6	5.5				
	930 BORD	40 F	1332.7	1334.8	3.3	14	3		
	2800 OTTA	22 GRF	1332	1334	12 D	4.6			
	237 TRST	41 F	1356.3	1356.7	1.5	386			L
	228 HARS	45 C	1356.3	1356.7	2	85	30		
	260 ONDR	8 S	1430.3	1430.3	.3	209			
	1470 BERL	3 S	1446.5	1447.2	2	2.7			
	2800 OTTA	1 S	1446.5	1447.2	2.5	8.2	4.1		
	1415 SGMR	1 S	1446.6	1447.8	7	2.8	1.1		
	4995 ATHN	2 GRF	1446.7	1447.7	3.1	6.6	3.9		
	9100 ARCE	2	1446.7	1448	3.3				
	1420 ARCE	2	1446.7	1447.8	3.5				
	2695 SGMR	3 S	1446.8	1447.8	6.5	11.3	4.5		
	8800 SGMR	1 S	1446.8	1447.6	5.3	9.7	3.9		
	4995 SGMR	1 S	1446.9	1447.6	6.7	8	3.2		
	1420 BOUL	3 S	1446	1447.5	2.5D	4	1		
	4995 BOUL	1 S	1446	1447.5	3.5	8	3		
	3000 BERL	3 S	1446	1447	4	9.6			
	2695 BOUL	3 S	1447.5	1448.5	2	9	3		
	1420 BOUL	8 S	1529.5	1530.5	3	4	1		
	1415 SGMR	20 GRF	1530.8	1544.4	14.8	3	.9		
	2800 OTTA	21 GRF	1530	1625	190	5.8	2.9		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
	2800 OTTA	1 S	1533.1	1533.9	2	.8	.4		
	606 SGMR	20 GRF	1534.1	1544.3	19.4	7.4	2.2		
	1420 BOUL	3 S	1542	1544	3.5	6	2		
	4995 SGMR	22 GRF	1603.3	1606.8	13.2	3.5	1.4		
	2695 SGMR	22 GRF	1603.4	1606.9	13.5	11.5	4.6		
	606 SGMR	22 GRF	1603.5	1605.5	13	33.6	10.1		
	2800 OTTA	40 F	1603	1607	4.1	13.4			
	1415 SGMR	22 GRF	1605.5	1606.9	11.1	11.8	4.7		
	1420 BOUL	8 S	1605.5	1606.5	1	8	3		
	2695 BOUL	8 S	1606.5	1607.5	1.5	9	3		
	2800 OTTA	1 S	1614	1615	2	1	.5		
	2800 OTTA	1 S	1656.8	1657.2	2	2.4	1.1		
	4995 BOUL	2 SF	1656	1657.5	2.5	6	2		
	1420 BOUL	8 S	1656	1657.5	3	3	1		
	2695 BOUL	1 S	1657.5	1658.5	2	4	1		
	2800 OTTA	40 F	1759.5	1804	6	3			
	2695 BOUL	45 C	1800	1802.5	2.5	3	1		
	1420 BOUL	8 S	1803	1803.5	2	6	2		
	2695 BOUL	1 S	1804.5	1805	1.5	4	1		
	2695 PENT	240 R	2206	2220	14	2.6	1.3		
	3750 TYKW	5 S	2307	2310.2	6	1.5	.5		
6	3750 TYKW	5 S	0035.8	0036.1	1	1.5	.5		
	9400 TYKW	5 S	0035.8	0036.1	1	24	6		
	100 HIRA	45 C	0224.3	0224.3	.5	1200	500		WL
	2000 TYKW	21 GRF	0245	0420	130	2.5	1		0R
	3750 TYKW	21 GRF	0245	0340	130	2	1		
	700 SYDN	45 C	0424	0425.7	4				
	1400 SYDN	40 F	0424.2	0425.7	3.1				
	500 HIRA	45 C	0424.2	0433	25	165	10		WR
	200 HIRA	45 C	0424.5	0425.7	1.5	55	20		ML
	100 HIRA	45 C	0424.7	0425.5	2	600	200		SL
	2695 MANI	4	0424.8	0432.7	19.4	90	26		
	1415 MANI	4	0424.8	0432.7	19.4	70	17.4		
	606 MANI	4	0424.8	0433.5	22.2	215	22.8		
	5730 IRKU	45 C	0424	0432	29	135	11		L
	5730 IRKU		0424	0432.4		89			L
	5730 IRKU		0424	0432.9		84			L
	5730 IRKU		0424	0434		59			L
	5730 IRKU		0424	0435.4		37			L
	5730 IRKU		0424	0439.6		22			L
	5730 IRKU		0424	0440.9		29			L
	8800 MANI	4	0426	0432.7	16.8	166	54		2 SPA
	4995 MANI	4	0426	0432.7	18.2	79	17		2 SCNA
	4995 ATHN	14 C	0427.8	0432.2	23.8	227	68.1		
	1400 SYDN	48 GB	0430.7	0432.2	12.6				
	9400 TYKW	28 PRE	0424	0425.2	6	7	2		
	9400 TYKW	45 C	0430	0433	25	250	30		
	9400 TYKW		0430	0432.1		235			
	9400 TYKW	30 PBI	0455		35	10	5		
	1000 TYKW	28 PRE	0424	0425.2	6	8	2.5		0R
	1000 TYKW	45 C	0430	0432.7	20	150	20		05R
	2000 TYKW	28 PRE	0424	0425.2	6	20	5		10L
	2000 TYKW	45 C	0430	0432.2	15	75	15		COMPLEX POL
	3750 TYKW	28 PRE	0424	0425.2	6	7	3		244043F
	3750 TYKW	45 C	0430	0432.1	15	104	20		0L,244043F
	700 SYDN	48 GB	0431	0433	12.2				
	35000 NAGO	5 S	0432	0433	2	82			
	35000 NAGO	29 PBI	0434	0440	20	18			
	100 HIRA	41 F	0435	0435.5	5	1200 D			WL
	200 HIRA	45 C	0435	0436	2	4500	400		MR
	200 HIRA	45 C	0438	0442	6.3	40	15		WR
	4995 ATHN	4 S/F	0459.7	0502.3	14.3	78.6	21.2		
	4995 MANI	4	0500	0504.5	10	93	28.8		
	500 HIRA	45 C	0500	0501.7	5	340	150		WL
	1400 SYDN	47 GB	0500.5	0502	3.5				
	700 SYDN	47 GB	0500.6	0502.6	3.9				
	2695 MANI	4	0500.9	0504.8	9.1	74	20.8		
	9400 TYKW	45 C	0500	0502.8	7	170	35		
	3750 TYKW	45 C	0500	0502.3	7	50	10		
	1000 TYKW	45 C	0500	0501.5	5	320	30		10R
	2000 TYKW	45 C	0500	0501.7	5	132	17		05R
	200 HIRA	45 C	0500	0504	6	5000	200		0
	606 MANI	40	0501	0503.5	9	161	65		
	1415 MANI	4	0501	0504.2	9	220	76		
	100 HIRA	45 C	0501 E	0504 U	4 D	1200 D	600 D		WL
	5730 IRKU	45 C	0501 U	0501.6	5 U	17	18		L
	5730 IRKU		0501 U	0502.3		76			L
	5730 IRKU		0501 U	0502.9		94			L
	5730 IRKU		0501 U	0503.4		55			L
	8800 MANI	4	0502.1	0504.5	7.9	172	70		
	35000 NAGO	5 S	0502	0503	2	45			
	3100 CRIM	40 F	0520 U						
	100 GORK	44 NS	0631 E		369		5		
	127 TORN	44 NS	0700 E	1056.8	460 D	41			V=0

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
6	200 GORK	44 NS	0720 E		340		5		
	260 ONDR	44 NS	0732 E		452 D	138			
	245 SGMR	43 NS	1231.3	1522.8	580.7D	21.1			3,CONT,SMF
	9100 GORK	23 GRF	0639.4	0805.3	145	27	5.8		
	9100 ARCE	28	0754.1	0756.7	9.1				
	5730 IRKU	45 C	0754	0756	9	60	8		L
	5730 IRKU		0754	0803.8		83			L
	5730 IRKU		0754	0804		75			L
	4995 ATHN	4 S/F	0802.2	0804.2	20	66.3	19.9		
	9100 ARCE	4	0803.2	0804.2	2.4				
	9100 GORK	4 SF	0803.3	0804.2	2	235			
	200 GORK	6 S	0803.5	0804.1U	1.3	30			
	1470 BERL	4 S/F	0803.5	0804.6	27				
	237 TRST	41 F	0803.5	0804.1	.9	140			
	3000 BERL	4 S/F	0803	0804	22	24			
	9500 BERL	4 S/F	0803	0804	14	155			
	3100 CRIM	1 S	0804	0805	6	8	3		
	8800 MANI	4	0804.8	0806.1	2.2	59	26.8		
	2695 MANI	4	0804.8	0806	2	20.8	6.5		
	606 MANI	4	0804.8	0805.8	2	10.4	3.3		
	4995 MANI	4	0804.8	0806.1	2.2	39.3	18.3		
	1415 MANI	1	0805.3	0806.2	1.5	2.2	1.1		
	9100 ARCE	29	0805.6		31.5				
	9100 ARCE	1	1013.5	1013.7	1.4				
	9100 GORK	23 GRF	1027.7	1118.2	177	21	.9		
	3000 BERL	21 GRF	1032	1104	126	19			
	1470 BERL	21 GRF	1035	1146	123	2.9			
	1420 ARCE	21	1036.8	1055	108				
	2950 GORK	46 C	1036.9	1040.1	19.6	14.5			
	2950 GORK		1036.9	1052.1		50			
	2950 GORK	29 PBI	1036.9	1056.6	124	21			
	3800 BERL	4 S/F	1038.5	1039.5	3.5	19			
	9100 ARCE	21	1039.4	1129.4	74				
	4995 ATHN	2 GRF	1039.9	1052.3	13.9	42.8	25.7		
	3000 BERL	4 S/F	1048.5	1052	9.5	54			
	9500 BERL	21 GRF	1048	1137	92	17			
	1420 ARCE	4	1050.1	1052.1	3.2				
	950 GORK	1 S	1050.4	1052.2	2.1	4.5	2		
	650 GORK	1 S	1050.5	1052.5	2.5	2	.5		
	9100 GORK	4 SF	1050.5	1051.8	3	24	11		
	9500 BERL	3 S	1050	1052	5	22			
	9100 ARCE	3	1051	1052.2	5.6				
	1470 BERL	4 S/F	1052	1053.7	38	22			
	930 BORD	8 S	1056.7	1056.7	.1	28	1		
	234 POTS	2 S/F	1122	1122.3	1.3	3500	350		
	113 POTS	2 S/F	1122	1122.3	3.3	600	30		
	237 TRST	41 F	1122.3	1122.5	.4	1590			L
	202 IZMI	3 S	1122.4	1122.5	.5	800	210		
	9100 GORK	2 SF	1136	1136.4	2	10	5		
	2800 OTTA		1140	1142	70 D	17.8			
	100 GORK	41 F	1224.2	1224.5U	8.1	65			
	100 GORK		1231.5U			65			
	113 POTS	45 C	1230.8	1231	1.5	280	30		
	2695 SGMR	20 GRF	1418.8	1421.6	20.5	11.2	3.4		CONT
	2800 OTTA	21 GRF	1418	1430	80	7.8	3.2		
	4995 SGMR	20 GRF	1419	1421.6	19.7	24.7	7.4		CONT
	8800 SGMR	20 GRF	1419.2	1421.6	19.3	52	15.6		CONT
	4995 BCUL	4 SF	1419.5	1421	4	23	8		
	15400 SGMR	20 GRF	1419.6	1421.6	21.9	30.7	9.2		CONT
	2800 OTTA	1 S	1419	1421.9	5	7.6	3.4		
	3000 BERL	4 S/F	1419	1421.3	14	8.8			
	9500 BERL	4 S/F	1419	1421.1	14	46			
	9100 ARCE	21	1419	1422.4	18.8				
	1420 ARCE	22	1420	1522.5	71				
	1470 BERL	1 S	1420	1421.4	8	1.9			
	9100 ARCE	3	1421	1421.6	1.3				
	2695 BOUL	3 S	1422	1422.5	2.5	6	2		
	113 POTS	1 S	1434.8	1434.9	.3	150	50		
	2800 OTTA	1 S	1520	1523	10	2	.6		
	1420 BOUL	45 C	1522	1522.5	3	3	1		
	2800 OTTA	23 GRF	1545	1557	40	3.2	1.6		
	237 TRST	41 F	1550.8	1551.4	.9	770			L
	1420 BOUL	8 S	1604.5	1605.5	2	5	2		
	9100 ARCE	3	1604.5	1605.9	5.8				AT SUNSET
	410 SGMR	6 S	1604.6	1605.3	2	15.2	4.6		CONT
	8800 SGMR	3 S	1604.6	1605.7	4.9	58.2	17.5		CONT
	245 SGMR	6 S	1604.9	1605.7	3.4	43.5	13.1		CONT
	2800 OTTA	4 S/F	1604	1605.9	3	30	6.7		
	2695 SGMR	3 S	1605	1605.8	4.6	30.1	9		CONT
	606 SGMR	1 S	1605	1605.8	1.5	4.3	1.3		CONT
	4995 SGMR	3 S	1605	1605.8	4.3	65.8	19.7		CONT
	15400 SGMR	3 S	1605.1	1605.7	5	29.2	8.8		CONT
	4995 BOUL	8 S	1605	1605	1.5	56	19		
	2695 BOUL	8 S	1606	1607	2.5	24	8		
	930 BORD	41 F	1620	1620.3	.6	47	2		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	2800 OTTA	20 GRF	1640	1648	25	1	.5		
	18 MCMA	6 S	1741	1743	3				
	2800 OTTA	1 S	1825	1826.5	5	4.6	1.1		
	2695 BOUL	8 S	1826.5	1827.5	3.5	4	1		
	4995 BOUL	1 S	1948	1949	2.5	8	3		
	245 SGMR	6 S	1949	1953	7.6	13.2	4		CONT,SWF
	410 SGMR	6 S	1949	1949.5	2.3	84.7	25.4		CONT,SWF
	4995 SGMR	2 S/F	1949.1	1949.7	2.6	6.9	1.9		CONT,SWF
	2695 SGMR	2 S/F	1949.2	1949.7	2.3	7.6	2.3		CONT,SWF
	606 SGMR	4 S/F	1949.3	1949.6	2.1	10	3		CONT,SWF
	2695 BOUL	3 S	1949	1950.5	3	7	2		
	2695 PENT	2 S/F	1949	1949.9	3	6.8	3.4		
	2695 PENT	20 GRF	2000	2010	20	2.6	1.3		
7	2000 TYKW	20 GRF	0418	0421.7	90	2	1		0R
	3750 TYKW	20 GRF	0418	0421.7	80	2	1		
	200 GORK	44 NS	0509 E		530		5		
	100 GORK	44 NS	0509 E		414		5		
	127 TORN	44 NS	0700 E	1201.9	480 D	43			V=1
	260 ONDR	44 NS	0720 E		465 D	88			
	245 SGMR	44 NS	1051 E	2022.1	679 D	114			3,CONT
	410 SGMR	44 NS	1051 E	2022.2	679 D	192			3,CONT
	100 HIRA	44 NS	2040 E	2220	700 D	160	50		SR
	200 HIRA	44 NS	2040 E	2300	700 D	25	15		SR
	208 VORO	44 NS	2200		360		18		
	9100 GORK	20 GRF	0755.7	0822	35.1	8	2.5		
	237 TRST	41 F	0811.3	0811.5	.3	160			L
	9100 GORK	20 GRF	0901.7	0902	7.6	8	2		
	9100 ARCE	1	0901.8	0902.6	7.5				
	1420 ARCE	1	0908.1	0908.5	.7				
	9100 GORK	20 GRF	1032	1039.8	25	6	1.5		
	930 BORO	3 S	1048.3	1048.4	.1	60	1		
	200 GORK	41 F	1106	1113.4U	29.4	25			
	200 GORK		1106	1132 U		25			
	408 TRST	42 SER	1129.8	1133.7	5.2	140			
	237 TRST	41 F	1129.9	1129.9	.7	265			L
	202 IZMI	41 F	1130	1130.1	20	90			
	127 TORN	8 S	1133.7	1135.1	2.3	100			
	1420 ARCE	1	1134.4	1134.7	1				
	9100 GORK	20 GRF	1139	1141.3	14.3	7	1.5		
	9100 ARCE	1	1139.8	1141.2	3.6				
	237 TRST	47 GB	1239.1	1431.5	204	23			R
	536 ONDR	40 F	1241	1251.6	11	16	7.8		
	808 ONDR	40 F	1242.6	1247.3	10	10	4.5		
	2800 OTTA	20 GRF	1245	1345	175	3.6	1.8		
	536 ONDR	4 S/F	1432.5	1435.6	14	48	12.8		
	808 ONDR	4 S/F	1435	1435.8	3	10	6.3		
	2800 OTTA	20 GRF	1730	1805	135	4.4	2.3		
	606 SGMR	22 GRF	1738.2	1832	92.6	46.5	18.6		CONT
	1420 BOUL	3 S	1739.5	1740.5	2	2	1		
	1420 BOUL	4 SF	1805	1806.5	5	4	1		
	4995 BOUL	45 C	2207	2208	23.5	47	9		
	2695 BOUL	45 C	2208.5	2209.5	45.5	34	15		
	2695 PENT	4 S/F	2208	2209.1	12	40	12		
	2695 PENT	29 PBI	2220	2220	30	5.6	2.6		
	9400 TYKW	45 C	2208	2209.1	8	20	7		
	9400 TYKW	29 PBI	2216		40	6	2		
	1000 TYKW	45 C	2208	2211.6	4	53	15		10R
	2000 TYKW	45 C	2208	2208.8	8	32	7		25R
	2000 TYKW	29 PBI	2216		40	3	1		
	3750 TYKW	45 C	2208	2209.1	10	48	14		05L
	3750 TYKW	29 PBI	2218		40	5	2		
	1420 BOUL	45 C	2208	2210	3	59	20		
	3750 TYKW	5 S	2351	2353.3	9	1.5	.5		
	2000 TYKW	5 S	2351	2353.3	9	1.5	.5		0R
8	3750 TYKW	5 S	0023	0025	9	1	.5		
	3750 TYKW	5 S	0055	0057.3	15	3	1		064075F
	3750 TYKW	5 S	0132	0133.6	20	3	.8		064075F
	2000 TYKW	5 S	0132	0134	10	1.5	.5		20R
	2000 TYKW	21 GRF	0229	0232	32	3	1		15R
	3750 TYKW	21 GRF	0229	0232	40	2.5	.8		064075F
	9400 TYKW	45 C	0239	0243	25	6	2		
	3750 TYKW	5 S	0245	0249	15	1.5	.5		
	2000 TYKW	5 S	0246	0250	14	2	1		20R
	200 GORK	44 NS	0457 E		360		10		
	100 GORK	44 NS	0457 E		363		10		
	202 IZMI	44 NS	0700		300	42			
	260 ONDR	44 NS	0700 E		490 D	49	12		
	127 TORN	44 NS	0700 E	1028.1	480 D	150			V=2
	245 SGMR	44 NS	1052 E	1226.9	677 D	48.6			CONT
	100 HIRA	44 NS	2040 E	2230	700 D	40	15		SR
	127 TORN		0700 E	1010.8		160			
	127 TORN	45 C	0910.7	0911.4	1.8	260	85		
	200 GORK	41 F	1015.7	1016.4U	19.3	90			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	POLARIZATION OR REMARKS
	200 GORK		1015.7	1024.8U		90			
	234 POTS	1 S	1056.7	1056.8	.6	330	100		
	127 TORN	45 C	1132	1132.7	1.5	270	65		
	1420 ARCE	23	1209.4	1242.4	100				
	1470 BERL	21 GRF	1213	1306	96	4.5			
	2800 OTTA	20 GRF	1215	1245	80	8.8	4.4		
	3000 BERL	20 GRF	1220	1245	110	13			
	9500 BERL	20 GRF	1223	1258	111	9.3			
	930 BORD	46 C	1223	1235	33	270	15		
	1415 SGMR	46 C	1224.4	1233.1	25.1	74.4	29.8		CONT
	1415 SGMR	46 C	1224.4	1235.3		60			CONT
	808 ONDR	46 C	1224	1235.2	32	210	31		
	410 SGMR	6 S	1228.5	1233.8	42.3	30.5	12.2		CONT
	606 SGMR	46 C	1228.6	1235.5	40.8	23.8	21.3		CONT
	606 SGMR	46 C	1228.6	1244.1		53.4			CONT
	536 ONDR	46 C	1228	1246.8	42	32	12.1		
	1420 ARCE	40	1229.3	1232.7	8.5				
	1470 BERL	4 C	1230.5	1233	6	39			
	9100 ARCE	20	1231.8	1256.4	88				
	1470 BERL	4 S/F	1243.5	1244	6.5	26			
	1420 ARCE	4	1243.7	1244.3	6				
	1420 ARCE	1	1252.6	1252.8	.7				
	536 ONDR	42 SER	1310	1320	77	28			
	808 ONDR	8 S	1416.3	1416.3	.3	46			
	1420 ARCE	1	1417.1	1417.3	.5				
	930 BORD	3 S	1417.1	1417.3	.2	30	2		
	9100 ARCE	1	1419.7	1420	.7				
	2800 OTTA	21 GRF	1520	1537	30	5.2	2.2		
	2800 OTTA	1 S	1523.5	1524	1	1.6	.8		
	2695 BCUL	8 S	1524	1524.5	1.5	4	1		
	2695 BCUL	45 C	1528	1531	21	10	3		
	2800 OTTA	2 S/F	1530	1530.2	4	5.2	1.8		
	2800 OTTA	1 S	1557	1602	9	1	.5		
	2800 OTTA	1 S	1836	1837	6	1.4	.8		
	245 SGMR	7 C	2032	2036.8	6.2	374	112		CONT
	1420 BCUL	3 S	2033.5	2034	6.5	4	1		
	2800 OTTA	1 S	2034	2034.5	6	4.4	1.1		
	2695 BCUL	8 S	2035	2035.5	2.5	4	1		
	2800 OTTA	21 GRF	2043.5	2045	36	4.4	2.2		
	2695 BCUL	3 S	2045	2051	14.5	9	3		
	2800 OTTA	1 S	2047	2050	9	5.2	2		
	100 HIRA	45 C	2239	2240.5	2	1200	30		MR
9	100 HIRA	45 C	0310	0311	2	80	30		SR
	100 HIRA	45 C	0338	0339.5	3	1200	150		WR
	100 HIRA	41 F	0421	0421	7	1200 D			WLWR
	1000 TYKW	45 C	0425.7	0426.1	2	130	15		25L
	2000 TYKW	45 C	0425.9	0426	4	12	2		COMPLEX POL
	3750 TYKW	5 S	0426	0427.2	3	4	1		064060F
	100 HIRA	27 RF	0500	0555	75	60	20		MR
	100 GORK	44 NS	0500 E		360		7		
	200 GORK	44 NS	0500 E		360		5		
	260 ONDR	44 NS	0737 E		453 D	21			
	2000 TYKW	21 GRF	0545	0622	90	3	1		
	3750 TYKW	21 GRF	0550	0636	70	10	2		
	3750 TYKW	5 S	0641	0642.3	3	6	2		
	2000 TYKW	5 S	0641	0642.4	5	3.5	1		15L
	3100 CRIM	1 S	0642	0643	3	3	1		
	127 TORN	40 F	0700 E		80 U				
	100 GORK	41 F	0734.8	0736.8	10.2	74			
	100 GORK		0739.9			74			
	100 GORK		0739.9	0744.4		74			
	100 GORK	2 S/F	0757.8	0758.2	1.5	80			
	100 GORK	3 S	0834.4	0834.6	.3	90	40		
	100 GORK	41 F	0845.5	0846.4	4.2	90			
	100 GORK		0845.5	0848.6		1500			
	200 GORK	41 F	0846	0846.5	4.3	10			
	200 GORK		0846	0849.4		30			
	113 POTS	45 C	0847.4	0847.9	2.2	560	100		
	1470 BERL	1 S	0921.8	0922.3	1.2	1.5			
	113 POTS	45 C	0921.9	0922.8	1.4	3500	500		
	100 GORK	4 S/F	0922	0923.6	1.6	14000			
	202 IZMI	3 S	0922.2	0922.7	1.4	70	32		
	200 GORK	6 S	0922.8	0923.5	1.3	30			
	536 ONDR	4 S/F	0922	0922	1.3	21	3.2		
	3000 BERL	3 S	0922	0922.1	1	7.5			
	650 GORK	2 SF	0923.3	0923.7	.9	4	1.7		
	100 GORK	42 SER	0935	0936	43	100			
	100 GORK		0935	0949.3		100			
	100 GORK		0935	1011.7		95			
	100 GORK		0935	1018		95			
	234 POTS	45 C	1051.8	1051.9	.2	500	175		
	113 POTS	1 S	1055.8	1055.9	.3	1000	350		
	100 GORK	3 S	1056	1056.2	.4	90			
	113 POTS	45 C	1138.7	1140.4	2.2	250	25		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	2800 OTTA	21 GRF	1550	1605	120	7.2	2.4		
	2800 OTTA	4 S/F	1550.1	1551.1	2.9	10.4	5.2		
	2800 OTTA	29 PBI	1553	1553	8	3.4	1.7		
	1420 BOUL	23 GRF	1550	1551	35	4	1		
	2695 BOUL	23 GRF	1551	1552	34.5	14	5		
	100 HIRA	43 NS	2300	0410	560 D	60	20		SR
10	100 GORK	44 NS	0530 E		330		5		
	127 TORN	44 NS′	0700 E	0957.5	330 D	60			V=2
	100 GORK	41 F	0942.2	0942.7	4.6	80			
	100 GORK		0942.2	0943.6		80			
	100 GORK		0942.2	0944.7		80			
	100 GORK		0942.2	0945.3		60			
	100 GORK		0942.2	0946.4		50			
	100 GORK	41 F	1026.3	1026.8	14.8	80			
	100 GORK		1026.3	1027.4		80			
	100 GORK		1026.3	1035.2		80			
	100 GORK		1026.3	1035.8		80			
	100 GORK		1026.3	1038.9		80			
	100 GORK		1026.3	1040.1		80			
	100 GORK		1026.3	1040.8		80			
	2800 OTTA	20 GRF	1956	2008	100	4.2	1.8		
	2695 PENT	1 S	2203	2203.1	1	.8	.4		
11	3000 BERL	1 S	1105	1107.1	18	5			
	1470 BERL	3 S	1106.7	1107	1.4	33			
	1420 ARCE	8	1106.9	1107	1				
	9100 GORK	1 S	1107.1	1107.5	1.2	8	4		
	930 BORD	3 S	1107.2	1107.3	.8	29	3		
	9100 ARCE	20	1107.4	1107.8	12				
	9500 BERL	1 S	1107	1107.1	24	5.3			
	930 BORD	3 S	1139.4	1139.4	.1	122	2		
	536 ONDR	8 S	1407.6	1407.6	.3	22			
	2800 OTTA	40 F	1431	1432	9	5.4			
	1420 ARCE	1	1442.6	1442.8	1				
	100 HIRA	45 C	2256.5	2257	6	1200	150		WL
12	1400 SYDN	21 GRF	0032.7	0034.6	5.8				
	500 HIRA	45 C	0032.8	0042.1	14	39	6		SR
	9400 TYKW	5 S	0032	0037	12	10	5		
	1000 TYKW	45 C	0032	0034.7	16	7.5	1.5		COMPLEX POL
	2000 TYKW	45 C	0032	0034.7	17	9	2		10R
	3750 TYKW	45 C	0032	0035.7	20	14	5		35L,244002F
	700 SYDN	1 S	0034.2	0034.6	.9				
	2000 TYKW	5 S	0147	0151.6	12	375	60		COMPLEX POL
	2000 TYKW	29 PBI	0159		20	5	1.5		
	3750 TYKW	47 GB	0148	0151.5	11	560	80		10L,244002F
	3750 TYKW	29 PBI	0159		20	4	2		
	1000 TYKW	47 GB	0148	0151.9	12	1380	185		30L/15R
	1000 TYKW	29 PBI	0200		20	20	5		
	208 VORO	47 GB	0148	0152	18	1200			
	1400 SYDN	48 GB	0149.5	0152	80.5				
	200 HIRA	48 C	0149	0151.2	11	5500	200		MR
	500 HIRA	48 C	0150	0153	11.5	6600	1000		SR
	500 HIRA	29 PBI	0150	0201.5	40	18	5		WL
	700 SYDN	48 GB	0150	0152	56				
	606 MANI	47	0150.7	0152.6	19.3D	5600	855		IIIG
	9400 TYKW	47 GB	0150	0151.4	9	1850	250		
	9400 TYKW	29 PBI	0159		20	15	4		
	100 HIRA	48 C	0150		13	1200 D			
	2930 VORO	47 GB	0150	0152	10	420			
	1415 MANI	47	0151.1E	0151.9U	25.9D	760	126		
	2695 MANI	47	0151.3E	0151.6U	11.7D	618	154		
	8800 MANI	47	0151.4E	0152.6U	21.1D	1190	310		3 SPA
	4995 MANI	47	0151.4E	0151.6U	12.4D	835	172		
	35000 NAGO	45 C	0151	0153	6	395			
	35000 NAGO	29 PBI	0157	0157	20	19			
	200 HIRA	27 RF	0200 E	0230	55	7	3		MR
	100 HIRA	27 RF	0213 E	0410	215	140	50		SR
	3180 CRIM	24 R	0746	0805		1			
	1470 BERL	1 S	0943	0944.6	3	3.7			
	9100 GORK	20 GRF	0949.6	0951.1	9.9	6	1.4		
	9500 BERL	20 GRF	1145	1216	48	5.4			
	3000 BERL	20 GRF	1206	1211	14	3.9			
	1470 BERL	20 GRF	1208	1210.5	7	2.7			
	9500 BERL	20 GRF	1300	1318	34	4			
	2800 OTTA	21 GRF	1305	1320	30	1.4	.7		
	3000 BERL	20 GRF	1310	1318.2	16	2.9			
	1470 BERL	1 S	1311	1312.4	9	3.5			
	2800 OTTA	1 S	1312	1312.7	2	1.2	.6		
	2800 OTTA	1 S	1317.5	1318.1	2	1.4	.7		
	2800 OTTA	1 S	1436	1438	3	1.2	.6		
	237 TRST	41 F	1511.9	1512.1	.4	180			R
	2695 PENT	1 S	1700	1701.5	8	1.6	.8		
	1420 BOUL	3 S	1700	1701.5	4.5	4	1		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	POLARIZATION OR REMARKS
	2695 BOUL	1 S	1701.5	1703	3.5	2	1		
	2695 PENT	20 GRF	1710	1715	50	1	.5		
	2800 OTTA	20 GRF	1835	1850	40	1.4	.7		
13	3750 TYKW	5 S	0033	0034.5	3	4	2		244020F
	3750 TYKW	29 PBI	0036		25	2	1		
	2000 TYKW	5 S	0033	0034.8	3	3.5	1.3		OR
	2000 TYKW	29 PBI	0036		12	.7	.3		
	208 VORO	4 S/F	0344	0344	2	60			
	200 GORK	6 S	0630.3	0630.7U	.6	40			
	200 GORK	41 F	0643.6	0644.9	2.4	16			
	200 GORK		0643.6	0645.2		40			
	113 POTS	45 C	0745.3	0746.6	3.3	420	40		
	202 IZMI	4 S/F	0746	0747	1.5	270	100		
	100 GORK	41 F	0746.2	0746.3	6.7	75			
	100 GORK		0746.2	0748.2		900			
	100 GORK		0746.2	0751		80			
	100 GORK		0746.2	0752.7		80			
	237 TRST	41 F	0746.2	0747.3	1.9	550			
	200 GORK	6 S	0746.4	0747.4U	2.2	140			
	200 GORK	6 S	0752.4	0752.8	.7	100			
	200 GORK	42 SER	1148.1	1148.3	11.5	30			
	200 GORK		1148.1	1155.5U		30			
	200 GORK		1148.1	1159.3		30			
	113 POTS	45 C	1158.6	1158.9	1.1	100	25		
	536 ONDR	3 S	1404.7	1404.7	.2	20			
	4995 BOUL	1 S	1513	1513.5	2.5	9	3		
	1428 BOUL	23 GRF	1625	1626	7	3	1		
	2800 OTTA	21 GRF	1710	1725	80	2.8	1.4		
	2695 SGMR	3 S	1711.4	1712.1	1.8	10.8	3.2		SWF
	4995 SGMR	1 S	1711.4	1712	1.8	6.4	1.9		SWF
	1415 SGMR	4 S/F	1711.6	1711.7	1.3	76.8	23		SWF
	1420 BOUL	8 S	1711	1712	2	5	2		
	2695 BOUL	8 S	1711	1712.5	4.5	9	3		
	2800 OTTA	1 S	1711	1712	3	9.4	3.2		
	1420 BOUL	23 GRF	1715	1715.5	11	2	1		
	1420 BOUL	1 S	1844	1845	1.5	2	1		
	2800 OTTA	20 GRF	1844	1930	100	1.4			
	1420 BOUL	3 S	2225.5	2226.5	2	2	1		
	2800 OTTA	1 S	2226.5	2227	1.5	3.6	1.8		
	2800 OTTA	29 PBI	2228	2228	35	1.2	.6		
	3750 TYKW	5 S	2226.5	2226.8	1.5	5	1.5		
	2000 TYKW	5 S	2226	2227	3	2.5	.7		OR
	2695 BOUL	1 S	2227	2228	2	4	1		
14	3750 TYKW	5 S	0123	0123.7	2	5	2		244039F
	3750 TYKW	29 PBI	0125		65	1.5	1		
	2000 TYKW	5 S	0123	0123.8	2	9	3		OR
	2000 TYKW	29 PBI	0125		65	1.5	.7		
	1000 TYKW	5 S	0123	0123.7	1	1.5	.5		10R
	2695 MANI	3	0124.3	0124.7	2.7	12.6	3.2		
	1415 MANI	2	0124.3	0124.7	2.7	5.9	2.7		CONT
	4995 MANI	1	0124.5	0124.7	2	5.4	1.8		
	5730 IRKU	1 S	0225	0228.8	4	11	4		
	2000 TYKW	20 GRF	0300	0304	120	1.5	.7		OR
	3750 TYKW	20 GRF	0300	0304	120	2	1		
	260 ONDR	44 NS	0700 E		474 D	9			
	9100 GORK	1 S	1030.7	1031	.6	7	3.4		
	2800 OTTA	20 GRF	1600	1634	100	1.6	.8		
	2800 OTTA	20 GRF	1910	1917	40	1.4	.7		
15	208 VORO	4 S/F	0117.5	0118	1	110			
	200 GORK	44 NS	0515 E		345		5		
	260 ONDR	44 NS	0720 E		458 D	31	6		
	245 SGMR	44 NS	1100 E	1310	657 D	23.5			
	37 SLOU	47	1056	1058	6	25			
	37 SLOU	31	1102.5	1110	45.5				
	8800 ATHN	3 S	1225.2	1225.4	.4	26	7.8		
	2800 OTTA	24 R	1550	1610	20	1	.5		
	2800 OTTA	27 RF	1550		100	1	.8		
	2800 OTTA	24P R	1610		50	1			
	2800 OTTA	26 FAL	1700	1730	30	-1	-0.5		
	2800 OTTA	20 GRF	1920	1927	20	1.4	.7		
	208 VORO	44 NS	2200		240		9		
16	200 GORK	44 NS	0500 E		180		5		
	100 GORK	44 NS	0500 E		240		5		
	127 TORN	44 NS	0610 E	0816.4	510 D	120			V=1
	260 ONDR	44 NS	0720 E		456 D	21	7		
	245 SGMR	44 NS	1102 E	1614.6	653 D	82.1			CONT
	9400 TYKW	5 S	0559.5	0600.1	1.5	32	6		
	127 TORN		0610 E	1111		105			
	200 GORK	41 F	0612	0618 U	29.2	20			
	200 GORK		0612	0627.4U		20			
	100 GORK	41 F	0653.1	0653.3	53.3	40			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	POLARIZATION OR REMARKS
	100 GORK		0653.1	0659.1		55			
	100 GORK		0653.1	0706.1		55			
	100 GORK		0653.1	0712.1		50			
	100 GORK		0653.1	0717.5		50			
	100 GORK		0653.1	0724.1		50			
	100 GORK		0653.1	0732.9		50			
	100 GORK		0653.1	0745.3		45			
	100 GORK	46 C	0826.4	0827.7	2.6	50			
	100 GORK		0826.4	0828.7		50			
	127 TORN	45 C	0903.5	0905.2	3.3	135	45		
	1420 ARCE	45	1018.5	1019.6	1.5				
	536 ONDR	4 S/F	1120.8	1120.8	1	22	2.8		
	127 TORN	45 C	1156.7	1158	3	120	30		
	2695 PENT	20 GRF	2015	2020	45	1.4	.9		
	208 VORO	44 NS	2200	0143	240	32	23		
17	202 IZMI	44 NS	0600		360	45			
	127 TORN	44 NS	0610 E	0809.5	510 D	240			V=2
	260 ONDR	44 NS	0720 E		457 D	24	9		
	245 SGMR	44 NS	1103 E	1803.2	651 D	81.6			CONT
	127 TORN		0610 E	0918.2		220 D			OFF SCALE
	208 VORO	44 NS	2200		240		21		
18	127 TORN	44 NS	0610 E	1115	510 D	100			V=1
	100 GORK	44 NS	0646 E		374		5		
	234 POTS	45 C	0908.9	0909.3	1.1	2500	500		
	1470 BERL	4 SF	0909	0909.3	1	9.2			
	930 BORD	3 S	1103.4	1103.4	.1	33	2		
	2800 CTTA	20 GRF	1740	1800	45	1.2	.6		
19	3750 TYKW	20 GRF	0110	0220	180	3	1.5		
	2000 TYKW	20 GRF	0110	0220	180	3	1.5		OR
	260 ONDR	44 NS	0730 E		421 D	29			
	127 TORN	43 NS	1200 U		160 D				V=1
	3100 CRIM	24 R	0944	1118		5			
	930 BORD	3 S	1219	1219	.1	19	2		
	2800 OTTA	240 R	1310	1525	15	1.8	.9		
	2800 OTTA	24 R	1340	1352	12	1.8	.9		
	2800 OTTA	27F RF	1340		287	1.8	1.6		
	930 BORD	3 S	1348.1	1348.2	.1	49	2		
	2800 OTTA	24P R	1352		248	1.8			
	2800 OTTA	26 FAL	1800	1827	27	-1.8	-.9		
	2800 OTTA	21 GRF	1830	1840	20	2	1		
	4995 BOUL	1 S	1836.5	1838	2	9	3		
	2800 OTTA	1 S	1837	1838.3	2	2	.9		
	2695 BOUL	1 S	1838	1838.5	1.5	3	1		
	245 SGMR	43 NS	2009.6	2119.9	101.40	48.9			
	2695 PENT	21 GRF	2150	2235	100	6.2	3.1		
	208 VORO	44 NS	2200	2305	240	30	18		
	2695 BOUL	23 GRF	2207.5	2309.5	24	7	2		
	2000 TYKW	21 GRF	2212	2222	70	3	1.5		
	3750 TYKW	20 GRF	2213	2219	80	6	3		
	2695 PENT	20 GRF	2214	2219	13	6.4	3		
	1400 SYDN	40 F	2216.5	2217.1	3.2				
	606 MANI	40	2216.9	2219.1	7.1	70	13		
	1415 MANI	40	2216.9	2219.1	5.6	12.8	5.1		
	1420 BCUL	23 GRF	2216	2218	12.5	4	1		
	2000 TYKW	5 S	2216	2218.6	4	4	2		20L
	700 SYDN	40 F	2217	2217.8	2.7				
	500 HIRA	45 C	2217.7	2219.3	3	60	25		WR
	1000 TYKW	45 C	2217	2219.3	5	74	15		SL
	1420 BCUL	3 S	2305.5	2307	3	1			
	2695 BOUL	3 S	2307.5	2309	2.5	2	1		
20	260 ONDR	44 NS	0818 E		353 D	30			
	245 SGMR	44 NS	1106 E	1154.4	79 D	8			
	245 SGMR	44 NS	1355 E	2005.1	474 D	18.5			3
	1420 ARCE	20	0820.4	0840.1	22				
	9100 ARCE	21	0827.6		5				RECORDDISTURBED
	9100 ARCE	1	0828.2	0828.5	1				
	9100 ARCE	1	0830.8	0830.9	.7				
	9100 ARCE	3	0843.9	0844	.8				RECORDDISTURBED
	9100 ARCE	1	1032.4	1032.6	1	----			3
	930 BORD	3 S	1402.8	1402.8	.1	17	2		
	245 SGMR	6 S	1538.1	1552	51.5	20.7	6.2		
	1415 SGMR	20 GRF	1540.2	1544	13.7	13.2	4		
	2800 OTTA	22 GRF	1540	1615	120	9.6	4.7		
	1420 BOUL	45 C	1540	1545.5	8	4	1		
	4995 SGMR	20 GRF	1541.5	1604.7	47.3	10.8	3.2		
	606 SGMR	20 GRF	1541.9	1546.5	30.6	30.6	9.2		
	2695 SGMR	20 GRF	1541.9	1604.6	46.7	9.7	2.9		
	2695 BOUL	45 C	1542.5	1548	7	4	1		
	930 BORD	40 F	1542	1546.3	7	23	4		
	208 VORO	44 NS	2200	0036	240	34	22		
21	202 IZMI	44 NS	0600		360	30			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
	127 TORN	44 NS	0610 E	0843.8	500 D	120			V=1
	260 ONDR	44 NS	0735 E		428 D	37			
	245 SGMR	44 NS	1108 E	1615	640 D	49.1			3,5
	100 HIRA	44 NS	2055 E	2245	660 D	200	70		SR
	200 HIRA	44 NS	2055 E	0435	660 D	35	10		SR
	208 VORO	44 NS	2345	2400	145	23	14		
	127 TORN		0610 E	1231.2		60			
	3100 CRIM	24 R	0804	1225 U		7			
	237 TRST	5 S	0936	0936	.1	205	70		R
	2800 OTTA	240 R	1500	1508	8	2	1		
	2800 OTTA	20 GRF	1535	1605	125	3.2	1.8		
	2695 PENT	20 GRF	2135	2150	85	2	1		
22	3750 TYKW	5 S	0211.3	0211.7	1.5	2.5	.8		
	8800 MANI	3	0211.4	0211.9	.9	29.9	15		
	4995 MANI	1	0211.4	0211.9	.9	8.6	2.9		
	9400 TYKW	5 S	0211	0211.5	1.5	15	4		
	500 HIRA	27 RF	0242	0349	130	10	2		O
	9400 TYKW	21 GRF	0400	0420	90	6	3		
	3750 TYKW	21 GRF	0400	0420	120	5	2.5		244064F
	2000 TYKW	20 GRF	0400	0422	70	2.5	1.3		OL
	3750 TYKW	5 S	0407.5	0408.1	2	6	1.5		
	9400 TYKW	5 S	0407.5	0408.1	2	9	3		
	4995 MANI	3	0408.9	0409.3	1.3	10.1	1.4		
	8800 MANI	3	0408.9	0409.2	1.9	23.9	3		
	202 IZMI	44 NS	0600		300	70			
	127 TORN	44 NS	0610 E	1110.3	500 D	290			V=2
	260 ONDR	44 NS	0830 E		355 D	50	5		
	245 SGMR	44 NS	1109 E	1709.9	637 D	65.5			
	3100 CRIM	24 R	0720	0911		2			
	9100 GORK	23 GRF	0850.2	0910.4	130	14	8.7		
	9100 GORK		0852.6	0853.2	1	8	4		
	9100 ARCE	21	0850.3	0909.6	107				
	3000 BERL	20 GRF	0851.5	0859	39	2.9			
	9100 ARCE	1	0852.4	0853.1	1.8				
	9500 BERL	3 S	0852	0852.7	83	11			
	408 TRST	42 SER	1012.7	1013.4	1.5	84			
	237 TRST	41 F	1012.7	1012.8	.7	250			R
	2800 OTTA	27 RF	1258		167	1	.9		
	2800 OTTA	24 R	1258	1305	7	1	.5		
	2800 OTTA	24P R	1305		130	1			
	2800 OTTA	26 FAL	1515	1545	30	-1	-.5		
	2800 OTTA	22 GRF	1725		100	1.8	1		
	4995 BOUL	8 S	1922.5	1923.5	2.5	16	5		
	2695 SGMR	1 S	1923.7	1924.2	1.1	4.4	1.3		
	8800 SGMR	3 S	1923.8	1924.1	1.4	11.3	3.4		
	4995 SGMR	3 S	1924.2	1924.6	1.5	17.8	5.3		
	2695 BCUL	1 S	1924	1925	2	4	1		
	2800 OTTA	2 S/F	1933.8	1934.2	2	4.2	1.6		
	208 VORO	44 NS	2200	2325	240	23	11		
23	500 HIRA	27 RF	0245	0331	80	6	2		O
	200 HIRA	27 RF	0328	0355	177	60	10		WR
	100 HIRA	27 RF	0330	0440	260 D	350	60		SR
	127 TORN	44 NS	0610 E		430 D				V=0
	260 ONDR	44 NS	0800 E		410 D	12			
	245 SGMR	44 NS	1110 E	1351.2	635 D	11.7			5
	237 TRST	5 S	1149.3	1149.3	.1	105	40		L
	237 TRST	5 S	1350.7	1350.7	.1	45	15		L
	237 TRST	41 F	1351.3	1351.3	.1	50			L
	237 TRST	41 F	1352.3	1352.5	.3	60			L
24	9100 ARCE	1	0918.6	0918.7	.5				
	9100 ARCE	41	0918.6	0919.6	8				
	9100 ARCE	3	0919.5	0919.6	1				
	9100 ARCE	1	0924.9	0925	1.7				
	245 SGMR	44 NS	1111 E	1831.3	632 D	28.6			
	410 SGMR	44 NS	1111 E	1830.9	632 D	9			
	4995 ATHN	2 GRF	1132.3	1139.8	15.2	9.6	5.8		
	4995 ATHN	2 GRF	1211.9	1226.7	25.4	13.2	7.9		
	8800 ATHN	4 S/F	1216.8	1217	1.3	71.1	21.3		
	930 BORD	3 S	1240.8	1240.9	.1	18	2		
	4995 ATHN	2 GRF	1255.5	1307.7	25.2	30	18		
	8800 ATHN	2 GRF	1303.1	1310.1	14.9	9.8	5.9		
	2800 OTTA	1 S	1431	1432	2	3.4	1.7		
	2800 OTTA	29 PBI	1433	1433	15	1.2	.6		
	2695 BOUL	1 S	1432.5	1433.5	2	4	1		
	930 BORD	3 S	1432.8	1432.9	.1	72	2		
25	127 TORN	44 NS	0658 E	0928.8	460 D	22			V=1
	260 ONDR	42 SER	1018	1052.1	112	35			
	237 TRST	41 F	1034.8	1034.9	.2	60			
26	1420 ARCE	8	0935.2	0935.3	.4				
	1420 ARCE	1	1248.3	1248.5	.5				

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1977

OCT 1977	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	9100	ARCE	1	1249.4	1249.7	.6				
	930	BORD	3 S	1339.3	1339.4	.1	29	2		
	1420	ARCE	2	1436.5	1437.6	2.3				
	1470	BERL	2 SF	1436.8	1437.2	1.7	2.7			
	1420	BOUL	8 S	1437	1437.5	1	2	1		
	18	MCMA	4 F	2100	2102	3			1	
27	9500	BERL	4 S/F	1109.5	1110.8	2	59			
	1470	BERL	1 S	1255	1255.7	1.5	2			
	1420	ARCE	2	1255	1255.6	1.6				
28	245	SGMR	44 NS	1116 E	1322	621 D	20.8			
	260	ONDR	43 NS	1150		170 D	26			
	930	BORD	3 S	1204.8	1204.8	.1	18	2		
	237	TRST	41 F	1209.9	1210	.2	42			
	1470	BERL	3 S	1218	1218.2	1	8.9			
	536	ONDR	3 S	1218.3	1218.3	.2	11			
	808	ONDR	3 S	1218.3	1218.3	.3	19			
	930	BORD	3 S	1218.4	1218.4	.2	35	2		
	237	TRST	41 F	1218.4	1218.5	.3	53			
	1415	SGMR	3 S	1218.4	1218.5	.2	11.3	3.4		
	245	SGMR	6 S	1218.5	1218.7	.5	10.8	3.2		
	410	SGMR	6 S	1218.6	1218.9	1	30.4	9.1		
	237	TRST	5 S	1226.8	1226.8	.1	52	18		
	237	TRST	5 S	1228.9	1228.9	.1	48	18		
	113	POTS	2 S/F	1426.7	1427	3.2	450	20		
	930	BORD	42 SER	1542.7	1543.1	12.3	29	3		
	2800	OTTA	240 R	1638	1655	17	1.6	.8		
	2800	OTTA	20 GRF	1700	1720	60	1.4	.7		
29	260	ONDR	44 NS	0750 E		408 D	15			
	245	SGMR	44 NS	1118 E	1530.8	618 D	31.2			
	3100	CRIM	20 CRF	0958	1019	24	2	1		
	9500	BERL	3 S	1301.8	1301.9	.4	52			
	18	MCMA	42 SER	1342	1357	23			2	
	2695	BOUL	3 S	2003.5	2004.5	3	4	1		
	2695	PENT	1 S	2057.5	2058.5	4.5	5.6	1.9		
	208	VORO	44 NS	2210		230		7		
30	202	IZMI	3 S	0756.3	0756.9	.7	125	35		
	1470	BERL	46 C	0759.5	0801	2	12			
	245	SGMR	44 NS	1119 E	1943.1	616 D	14.8			
	606	SGMR	4 S/F	2046.7	2048.2	2	22.4	6.7		
	410	SGMR	6 S	2047.5	2050	6.5	62	18.6		
	245	SGMR	6 S	2049.6	2052	4.2	21.6	6.5		
31	606	MANI	4	0409	0414.2	8	12.8	3.8		
	1415	MANI	2	0410.5	0412.7	7.5	5.2	1.2		
	2695	MANI	4	0410.5	0412.7	7.5	24.2	10.5		
	3750	TYKW	45 C	0410.5	0411.4	4	19	3		10L,065094F
	200	HIRA	45 C	0410.8	0414	7.5	300	7		WR
	1400	SYDN	40 F	0411.3	0413.9	3.2				
	700	SYDN	21 GRF	0411.6	0414	2.8				
	2000	TYKW	45 C	0411	0413.8	6	6	2		45R
	1000	TYKW	45 C	0411	0411.7	4	12	4		70R
	500	HIRA	45 C	0411	0414.3	4	33	10		WL
	100	HIRA	45 C	0417	0418	3	1100	450		WL
	100	GORK	44 NS	0630		360		5		
	127	TORN	44 NS	0650 E	1048.4	430 D	27			V=1
	245	SGMR	44 NS	1120 E	1414.5	613 D	29.9			
	9100	GORK	2 S/F	0851.2	0851.3	.5	21	10		
	9100	ARCE	1	0929.9	0930	.5				
	9100	ARCE	1	1007.6	1008.1	1				
	9100	ARCE	1	1012.6	1013	1				
	9100	ARCE	3	1129.2	1129.4	1.4				
	9100	ARCE	3	1149	1149.4	1.4				
	237	TRST	41 F	1414.3	1414.7	.5	85			
	237	TRST	41 F	1424.2	1424.2	.1	85			
	9100	ARCE	4	1531.5	1532.6	1.6				AT SUNSET

Reports received from the following observatories:

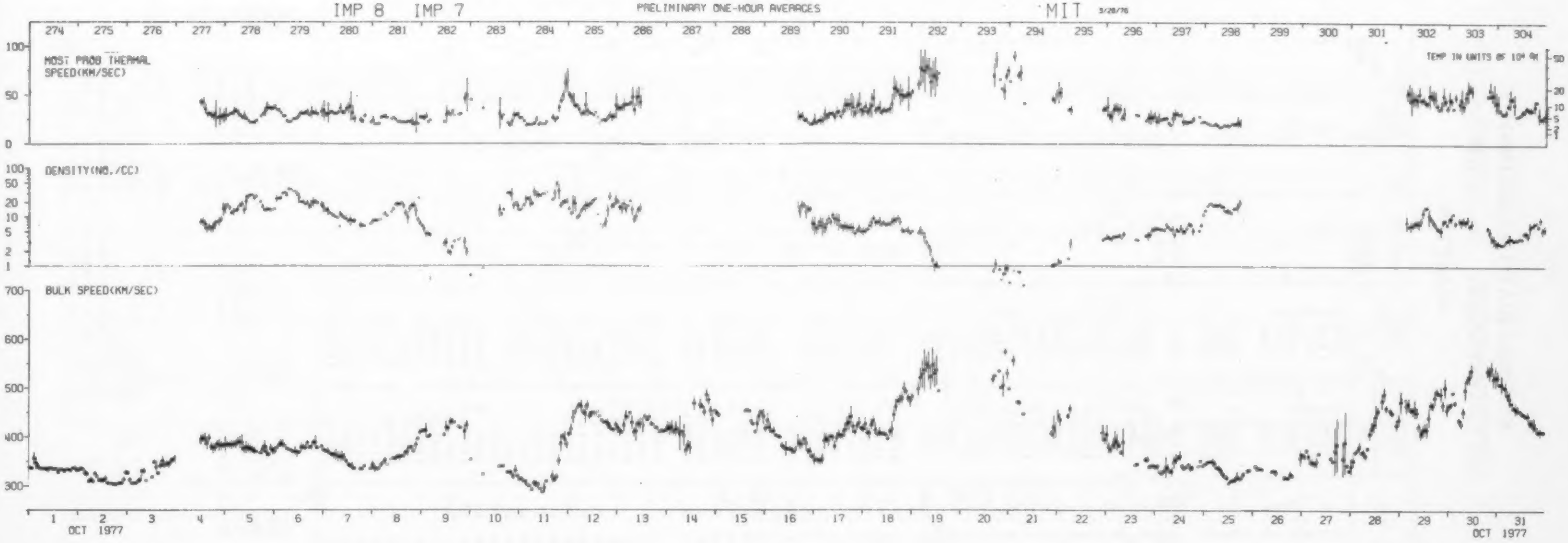
ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

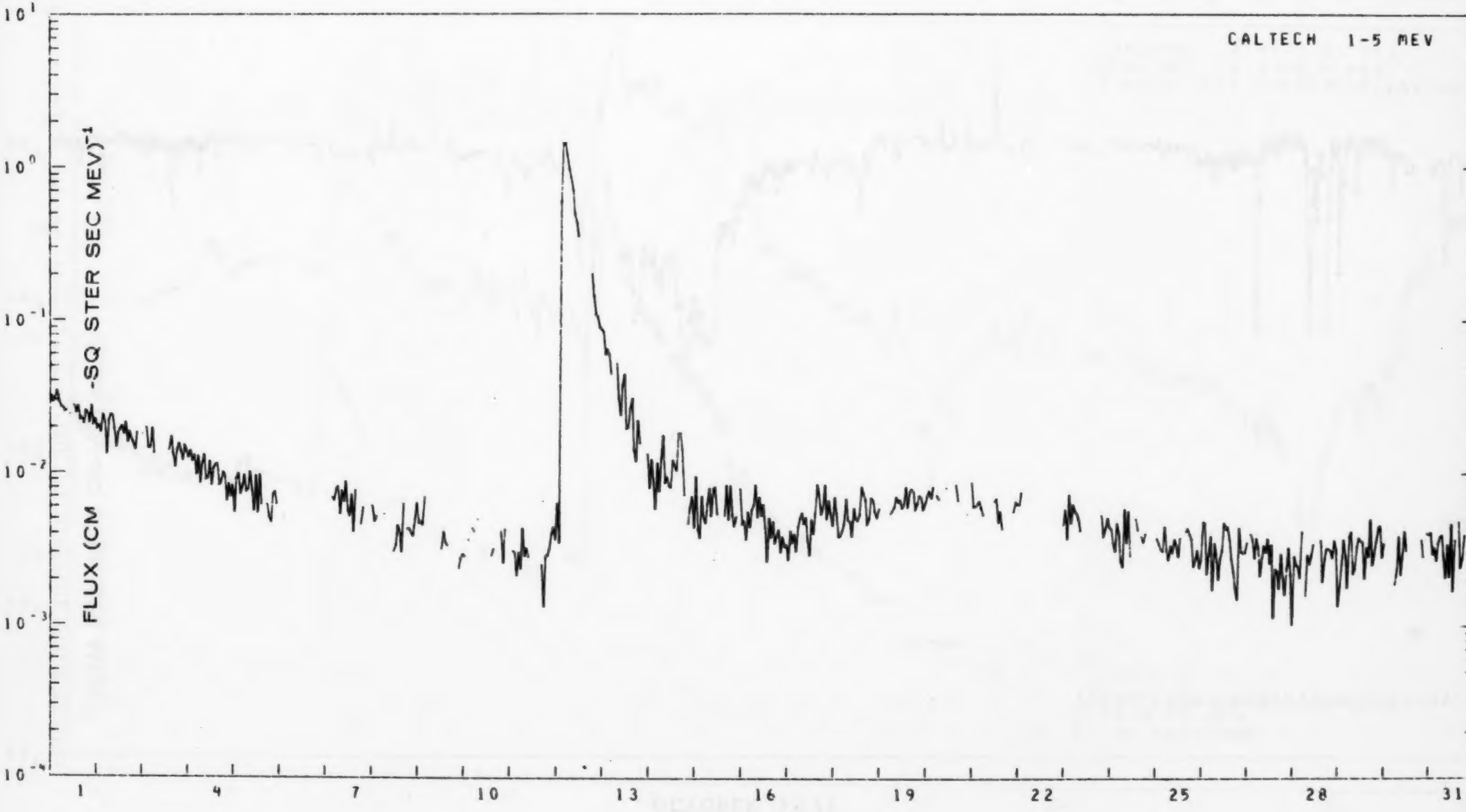
IMP 7 AND 8 SOLAR WIND PLASMA

OCTOBER 1977



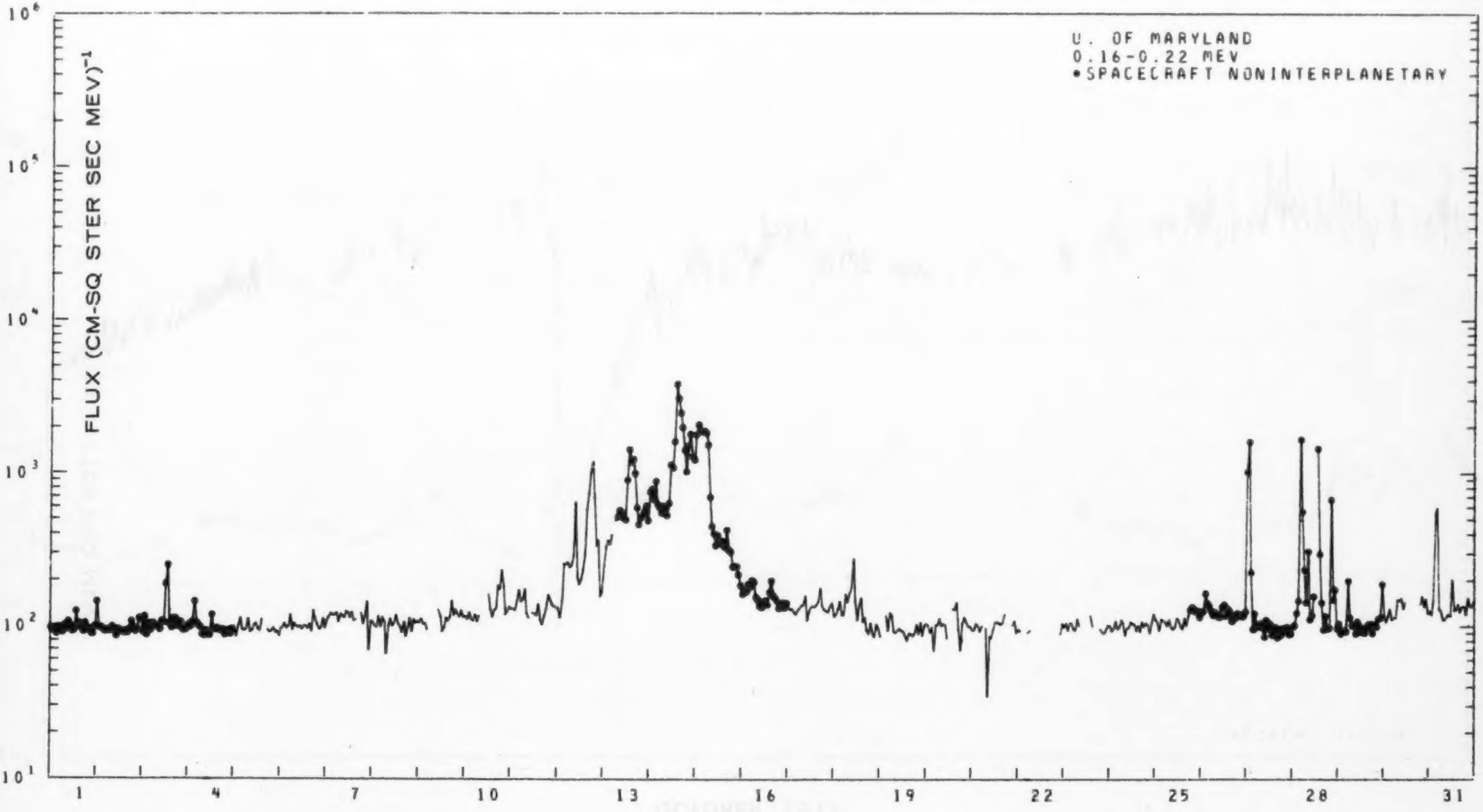
IMP 7 AND 8 ELECTRONS

OCTOBER 1977



IMP 7 AND 8 LOW ENERGY PROTONS

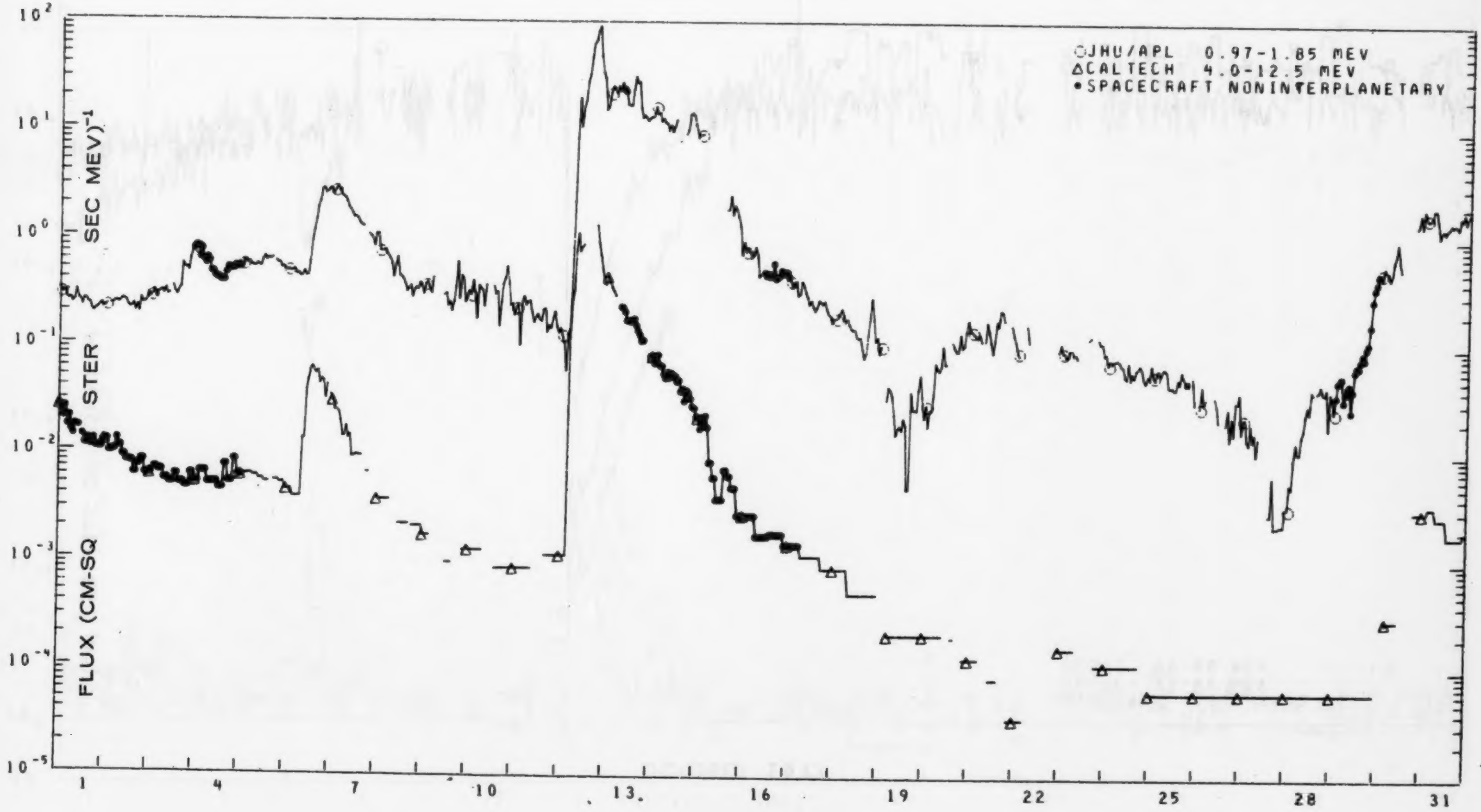
OCTOBER 1977



IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

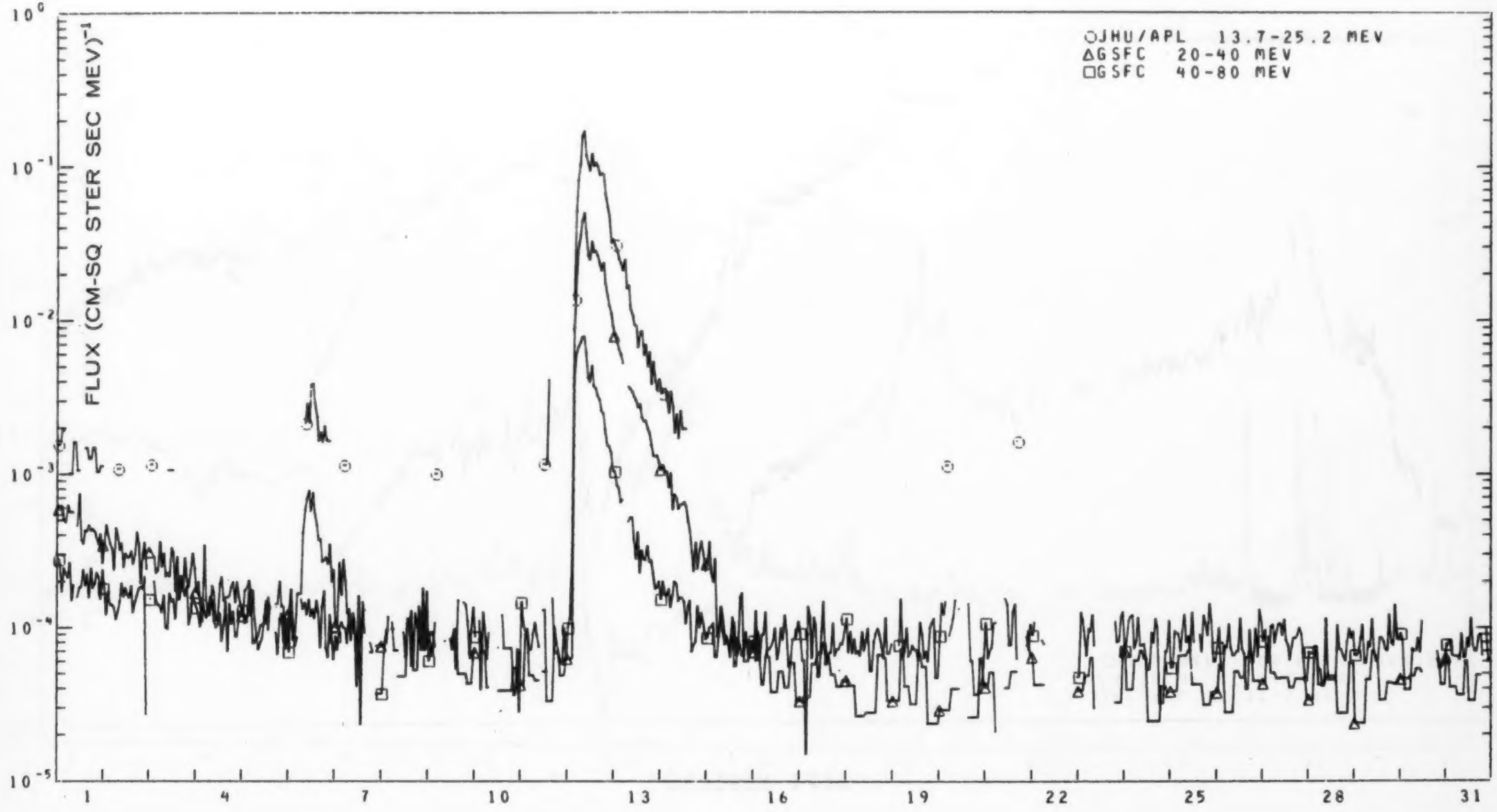
IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

OCTOBER 1977



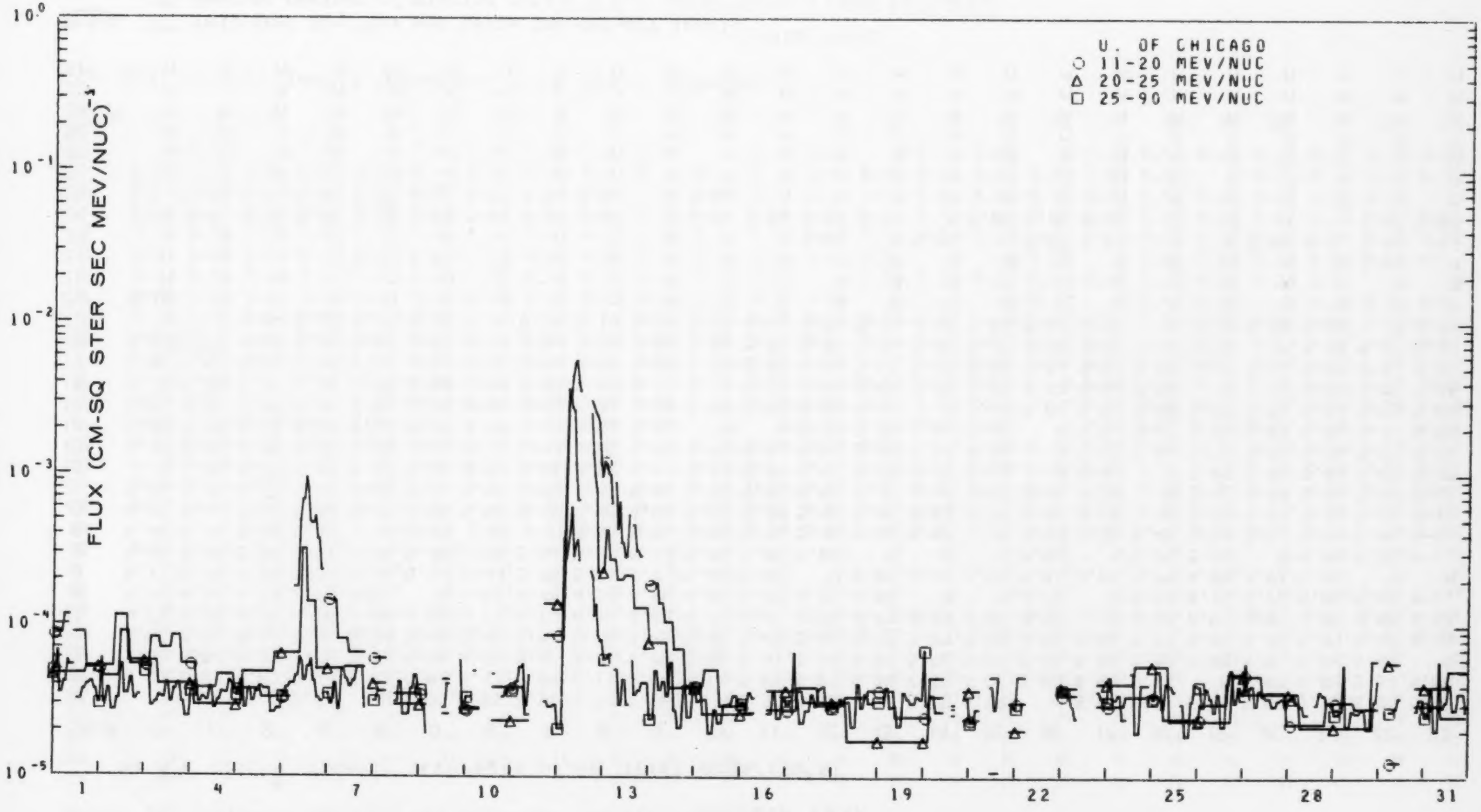
IMP 7 AND 8 HIGH ENERGY PROTONS

OCTOBER 1977



IMP 7 AND 8 ALPHA PARTICLES

OCTOBER 1977



COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
OCTOBER 1977

Si XV (5.09Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	5.76	M	5.39	M	5.95	6.05	5.98	5.77	5.50	M	5.96	5.83	M	5.79	6.00	M	6.05	5.62	5.85	5.88	5.99	6.06	5.99
2	6.23	6.05	5.82	5.94	6.02	6.04	6.18	5.90	6.11	5.84	5.74	5.88	6.01	6.04	6.00	6.07	6.09	6.09	5.95	M	6.07	6.03	5.34	5.88
3	5.90	5.84	5.85	5.69	5.84	5.96	5.82	5.67	5.71	5.75	5.58	5.41	5.66	5.67	5.68	5.61	5.63	5.66	5.55	5.48	5.51	5.56	5.66	M
4	4.85	5.08	5.47	5.50	5.24	5.42	5.46	5.54	5.50	5.48	5.49	5.43	5.44	5.22	5.25	5.39	4.76	5.00	5.33	5.38	5.20	5.35	5.43	4.83
5	4.03	4.19	4.57	4.66	4.60	4.68	4.72	4.74	4.36	4.63	4.74	4.65	4.74	4.72	4.63	4.68	4.02	M	4.60	4.89	4.87	4.89	4.80	4.53
6	4.74	4.57	4.77	4.79	4.81	M	4.63	4.46	4.58	4.76	4.88	3.93	4.27	4.86	M	M	4.77	M	5.18	5.16	5.26	5.06	5.28	*-1.
7	5.11	5.16	5.29	5.33	5.36	5.14	5.44	5.38	5.01	5.31	5.49	5.47	M	5.01	4.82	4.81	5.01	4.95	4.79	4.90	4.97	5.20	M	M
8	5.11	5.20	5.37	4.91	5.28	5.45	5.38	5.32	5.36	5.43	5.49	5.35	5.07	M	M	M	4.84	M	5.25	5.48	M	4.88	5.39	*-1.
9	5.40	5.47	5.49	5.55	M	5.33	M	M	5.55	5.61	5.59	5.18	5.48	5.63	5.67	M	5.05	5.35	5.45	5.55	5.54	5.54	5.48	*-1.
10	5.36	5.34	5.54	5.24	5.47	5.56	5.57	5.48	5.45	5.55	5.49	5.35	5.47	5.47	5.63	5.77	5.73	5.68	M	5.75	4.69	5.11	5.59	*-1.
11	5.76	5.71	5.36	5.75	5.80	5.61	5.51	5.73	5.69	5.84	5.77	5.72	5.42	5.42	5.43	5.52	5.41	5.25	M	5.42	5.28	5.54	5.66	5.67
12	M	5.53	5.32	5.25	5.02	5.06	5.04	5.01	4.97	5.11	5.14	5.35	5.07	5.29	5.23	5.24	M	5.47	M	5.09	5.55	5.09	5.25	5.37
13	5.39	5.06	5.37	5.56	5.58	5.61	5.74	5.43	5.68	5.59	5.77	5.64	5.72	5.84	5.87	5.34	M	5.62	5.94	5.77	5.77	5.95	5.95	5.79
14	5.90	5.93	5.91	5.88	5.45	5.76	5.79	5.26	5.51	5.56	M	M	5.38	5.38	5.61	5.43	M	5.54	5.92	5.91	5.83	5.84	*-1.	5.96
15	5.88	5.73	5.90	5.70	5.84	6.03	6.00	6.08	6.03	6.22	5.89	6.00	6.00	6.02	M	5.98	5.87	5.52	5.69	5.77	5.79	5.84	5.65	5.89
16	5.93	5.90	5.96	5.96	6.00	6.03	5.94	5.98	6.06	6.12	6.13	5.99	6.03	6.03	5.95	5.89	5.93	6.04	5.98	M	5.72	5.67	5.80	5.86
17	5.85	5.69	5.99	5.98	5.72	6.04	5.96	5.99	5.93	6.00	6.08	6.05	6.08	5.99	5.78	5.98	6.04	5.96	5.80	5.97	5.94	5.98	*-1.	5.91
18	5.84	5.77	5.52	5.68	5.69	5.82	5.92	5.84	5.36	5.95	6.00	5.95	5.87	5.92	5.88	5.71	5.83	5.76	5.42	5.74	M	5.75	5.57	5.44
19	M	M	4.94	5.10	5.27	5.25	5.15	5.26	5.13	5.24	5.15	4.82	4.68	5.14	4.94	5.00	5.24	5.22	M	5.32	5.30	5.60	M	4.73
20	5.15	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
22	M	M	M	M	5.38	5.07	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.00	M
23	M	M	M	M	M	M	M	M	M	M	M	M	5.23	M	5.49	M	5.67	5.52	M	M	5.86	*-1.	5.88	A\
24	5.75	5.97	5.80	5.75	5.76	5.85	5.82	5.93	5.60	M	6.00	6.04	6.02	5.71	M	5.09	5.38	5.77	M	M	M	M	5.60	5.67
25	5.71	5.79	5.60	5.83	5.97	6.15	5.87	5.96	6.06	M	5.21	M	M	M	M	M	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

<u>Note:</u> "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
OCTOBER 1977

Si XIII (5.68A) Hourly Averages (-Log (flux), ergs/cm^{2}s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	6.09	M	5.82	M	6.42	6.43	6.35	6.13	5.89	M	6.14	6.21	M	6.11	6.60	M	6.82	5.97	6.40	6.19	6.42	6.38	6.28
2	6.56	6.39	6.27	6.27	6.50	6.44	6.57	6.30	6.43	6.19	6.11	6.16	6.43	6.40	6.04	6.47	6.75	7.06	6.28	M	6.55	6.34	5.69	6.22
3	6.29	6.05	6.16	6.03	6.13	6.33	6.23	6.13	6.14	6.19	5.95	5.77	6.14	6.09	6.05	6.00	6.03	6.07	5.97	5.90	5.97	6.02	6.10	M
4	5.19	5.47	5.85	6.02	5.66	5.75	5.89	6.04	5.88	5.95	5.97	5.95	5.86	5.61	5.76	5.82	5.13	5.43	5.73	5.82	5.57	5.75	5.77	5.26
5	4.46	4.60	4.95	5.03	4.97	5.06	5.08	5.13	4.69	4.98	5.12	5.03	5.13	5.14	4.99	5.13	4.41	M	5.05	5.37	5.30	5.31	5.25	4.95
6	5.21	5.00	5.24	5.35	5.32	M	5.06	4.88	4.96	5.19	5.34	4.28	4.63	5.32	M	M	5.20	M	5.69	5.68	5.70	5.50	5.69	*-1.
7	5.54	5.57	5.69	5.83	5.79	5.49	5.79	5.77	5.38	5.64	5.87	5.87	M	5.30	5.20	5.17	5.34	5.26	5.10	5.22	5.24	5.51	M	M
8	5.42	5.48	5.63	5.15	5.51	5.86	5.74	5.72	5.79	5.80	5.83	5.77	5.46	M	M	M	5.12	M	5.63	6.36	M	5.16	5.74	*-1.
9	5.88	5.76	5.94	5.84	M	5.78	M	M	5.55	6.22	5.79	5.55	5.70	6.22	6.27	M	5.44	6.10	5.80	6.03	5.90	6.04	5.83	*-1.
10	5.70	5.65	6.01	5.60	5.97	5.93	5.95	5.88	5.83	6.02	5.93	5.77	5.94	5.94	6.12	6.31	6.16	6.07	M	6.10	5.03	5.47	6.03	*-1.
11	6.12	6.15	5.73	6.16	6.43	6.01	5.94	6.28	6.21	6.28	6.13	6.10	5.80	5.67	5.78	5.89	5.92	5.78	M	5.91	5.72	6.02	6.08	6.11
12	M	6.10	5.77	5.65	5.44	5.46	5.42	5.38	5.34	5.50	5.55	5.74	5.44	5.64	5.56	5.63	M	5.98	M	5.46	5.88	5.44	5.57	5.75
13	5.72	5.37	5.71	5.94	5.98	5.96	6.12	5.80	6.07	5.92	6.12	6.00	6.03	6.26	6.25	5.68	M	6.00	6.43	6.18	6.17	6.20	6.28	6.16
14	6.30	6.36	6.20	6.45	5.84	6.20	6.15	5.62	5.81	5.84	M	M	5.66	5.82	5.83	5.65	M	5.87	6.27	6.28	6.17	6.23	*-1.	6.28
15	6.25	6.05	6.26	6.12	6.22	6.40	6.55	6.39	6.37	7.05	6.10	6.49	6.29	6.53	M	6.68	6.48	5.90	6.08	6.02	6.28	6.24	5.99	6.27
16	6.49	6.44	6.33	6.41	6.39	6.56	6.42	6.44	6.75	6.71	6.38	6.32	7.87	6.38	6.41	6.32	6.32	6.36	6.51	M	6.06	6.04	6.32	6.32
17	6.24	6.14	6.39	6.35	6.37	6.77	6.62	6.59	6.32	6.47	6.78	6.50	6.52	6.51	6.22	6.52	6.59	6.31	6.22	6.34	6.41	6.50	*-1.	6.42
18	6.27	6.15	5.97	6.10	6.16	6.26	6.46	6.33	5.77	6.41	6.35	6.81	6.28	6.37	6.42	6.12	6.34	6.11	5.83	6.21	M	6.22	6.06	5.86
19	M	M	5.43	5.61	5.79	5.76	5.68	5.73	5.60	5.74	5.63	5.25	5.12	5.65	5.39	5.51	5.79	5.66	M	5.81	5.77	6.11	M	5.16
20	5.62	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.06	M
23	M	M	M	M	M	M	M	M	M	M	M	M	5.60	M	5.81	M	6.08	6.08	M	M	6.23	*-1.	6.33	AA
24	6.21	6.48	6.28	6.27	6.11	6.16	6.26	6.11	6.05	M	6.39	6.62	6.73	6.22	M	5.40	5.74	6.22	M	M	M	M	6.02	6.06
25	6.12	6.24	5.93	6.26	6.43	6.52	6.22	6.35	6.53	M	5.66	M	M	M	M	M	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
OCTOBER 1977

Si XII (5.82Å) Hourly Averages (-Log (flux), ergs/cm^2 s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	5.92	M	5.68	M	5.90	6.04	5.97	5.91	5.82	M	6.00	5.97	M	5.96	6.08	M	6.01	5.92	5.87	6.00	6.14	6.13	6.04
2	6.00	6.02	5.92	6.01	6.05	6.08	6.10	6.03	6.04	5.96	5.88	5.94	6.04	5.99	6.17	5.99	5.95	6.03	5.94	M	6.05	5.98	5.65	5.89
3	5.86	5.82	5.88	5.82	5.85	5.91	5.97	5.83	5.85	5.85	5.76	5.76	5.81	5.77	5.73	5.70	5.73	5.74	5.67	5.64	5.63	5.69	5.68	M
4	5.20	5.33	5.58	5.60	5.53	5.56	5.56	5.63	5.57	5.58	5.59	5.52	5.54	5.43	5.45	5.48	5.19	5.29	5.45	5.50	5.43	5.45	5.47	5.24
5	4.66	4.79	5.02	5.11	5.07	5.10	5.12	5.12	4.83	5.02	5.08	5.06	5.07	5.11	5.05	5.06	4.62	M	5.00	5.16	5.16	5.19	5.11	5.01
6	5.09	4.99	5.17	5.10	5.17	M	5.05	4.97	5.01	5.12	5.22	4.42	4.74	5.16	M	M	5.16	M	5.38	5.36	5.35	5.29	5.40	*-1.
7	5.33	5.36	5.43	5.50	5.47	5.37	5.51	5.49	5.39	5.48	5.57	5.54	M	5.40	5.21	5.22	5.35	5.32	5.22	5.22	5.29	5.36	M	M
8	5.40	5.42	5.44	5.20	5.43	5.50	5.50	5.41	5.46	5.50	5.50	5.45	5.24	M	M	M	5.17	M	5.40	5.36	M	5.00	5.23	*-1.
9	5.37	5.04	5.24	5.27	M	5.27	M	M	5.35	5.41	5.50	5.33	5.46	5.53	5.68	M	5.36	5.46	5.50	5.57	5.55	5.55	5.55	*-1.
10	5.50	5.45	5.55	5.45	5.57	5.58	5.62	5.59	5.54	5.59	5.60	5.56	5.61	5.54	5.67	5.69	5.68	5.65	M	5.71	5.18	5.41	5.63	*-1.
11	5.69	5.69	5.57	5.70	5.77	5.69	5.65	5.74	5.69	5.79	5.75	5.70	5.62	5.53	5.58	5.63	5.61	5.51	M	5.59	5.52	5.62	5.68	5.69
12	M	5.66	5.60	5.53	5.39	5.41	5.39	5.31	5.34	5.36	5.42	5.49	5.44	5.39	5.42	5.46	M	5.58	M	5.33	5.58	5.45	5.50	5.56
13	5.51	5.39	5.56	5.65	5.67	5.72	5.75	5.66	5.74	5.71	5.76	5.69	5.79	5.81	5.81	5.61	M	5.76	5.80	5.79	5.78	5.88	5.83	5.84
14	5.85	5.90	5.86	5.79	5.70	5.83	5.87	5.53	5.71	5.75	M	M	5.75	5.63	5.68	5.62	M	5.62	5.92	5.84	5.80	5.89	*-1.	5.83
15	5.74	5.82	5.95	5.84	5.94	5.95	6.00	6.02	5.88	5.99	5.99	5.90	5.94	5.94	M	5.97	5.99	5.76	5.79	5.82	5.82	5.80	5.77	5.87
16	5.88	5.84	5.89	5.85	5.87	5.93	5.87	5.88	5.90	5.94	5.97	5.89	5.85	5.87	5.90	5.89	5.87	5.94	5.91	M	5.76	5.72	5.79	5.84
17	5.85	5.74	5.86	5.86	5.84	5.94	5.89	5.86	5.89	5.91	5.97	5.94	5.89	5.91	5.80	5.90	5.99	5.86	5.83	5.86	5.84	5.86	*-1.	5.84
18	5.79	5.80	5.73	5.74	5.68	5.79	5.82	5.80	5.69	5.80	5.87	5.85	5.82	5.85	5.83	5.70	5.80	5.79	5.65	5.79	M	5.76	5.71	5.61
19	M	M	5.35	5.46	5.49	5.48	5.45	5.46	5.42	5.46	5.42	5.34	5.13	5.40	5.29	5.33	5.47	5.50	M	5.55	5.58	5.69	M	5.25
20	5.42	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
22	M	M	M	M	5.41	4.18	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	4.81	M
23	M	M	M	M	M	M	M	M	M	M	M	M	5.55	M	5.75	M	5.80	5.73	M	M	5.95	*-1.	5.98	AJ
24	5.81	5.92	5.89	5.88	5.95	5.91	6.01	5.99	5.76	M	5.94	6.01	5.97	5.87	M	5.41	5.59	5.85	M	M	M	M	5.84	5.89
25	5.86	5.91	5.76	5.90	6.07	6.07	6.00	6.02	6.00	M	5.66	M	M	M	M	M	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

SEPTEMBER 1977 DATA

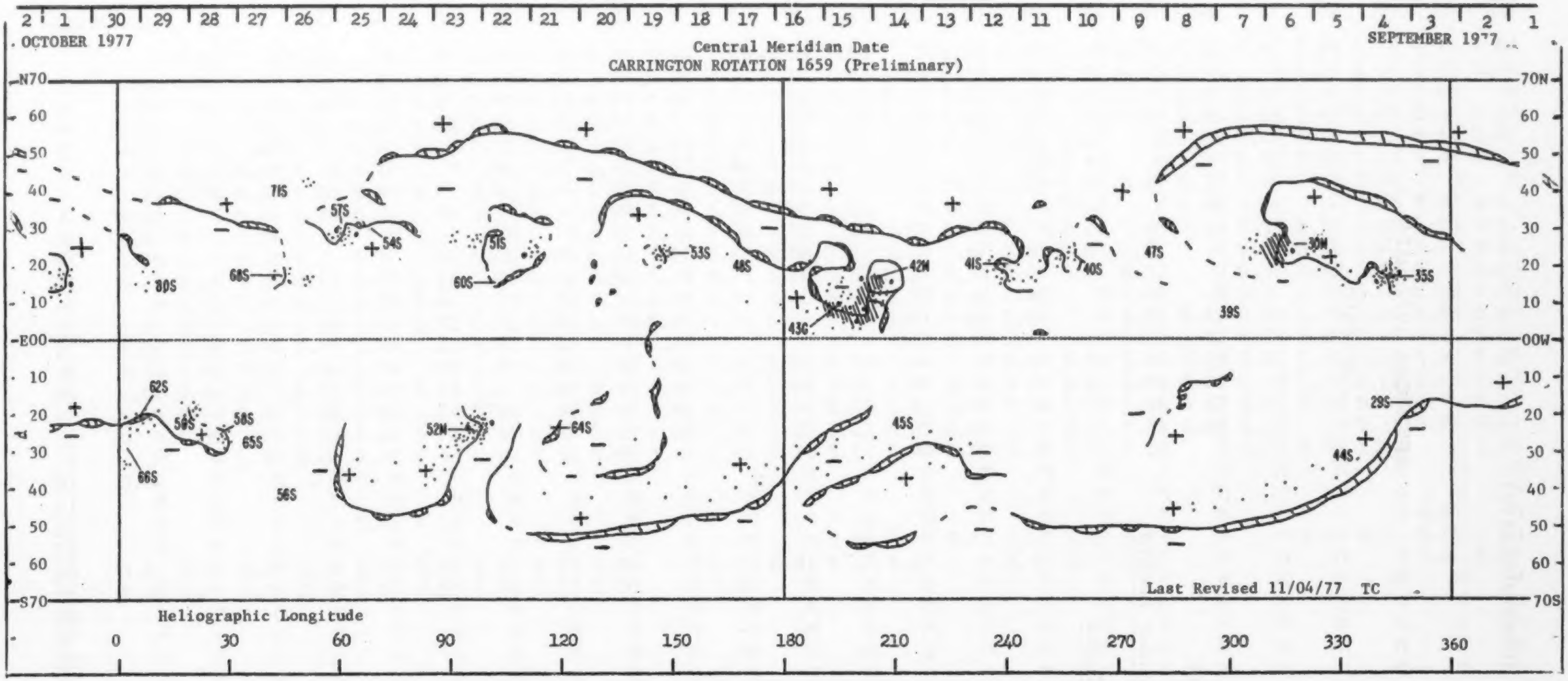
Contents

	Page
Hα Synoptic Chart	44-45
Abbreviated Calendar Record	46-53
Regional Flare Index	53

ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

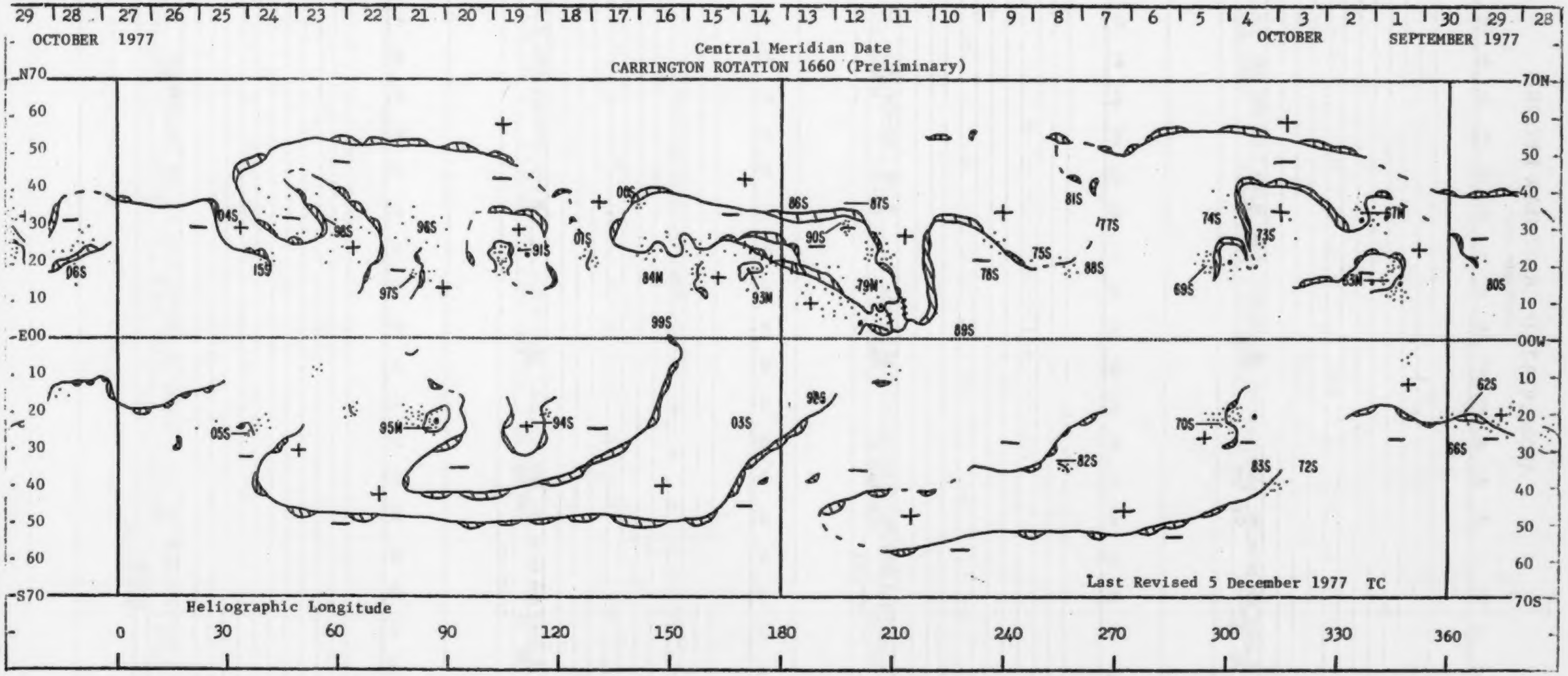
CARRINGTON ROTATION 1659 (PRELIMINARY)



ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

SEPTEMBER 1977 - OCTOBER 1977



ABBREVIATED CALENDAR RECORD

SEPTEMBER 1977

Sep. 1, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 4 04 — Kp: 2- | 1o | 1o | 1- | 1+ | 1- | 0+ | 1-

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- moderately bright SE- moderately bright W. Limb 7 days later: NW- SW-

Indices: Rz: 22 (Final) 10 cm flux: 82 Flare: 10/16.0 Ca: 8.0 Ip: 0 Ia: 0

Solar Regions

Sunspots

Sep. 2, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 6 06 — Kp: 1o | 1o | 0+ | 1- | 2o | 2+ | 2- | 3-

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- SW-

Indices: Rz: 29 10 cm flux: 83 Flare: 4/21.3 Ca: 9.3 Ip: 0 Ia: 0

Solar Regions: (14925) S19

Sunspots

Sep. 3, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m (noise storm), Dkm

SID

X-Rays

Ap 8 — Kp: 3+ | 3+ | 2- | 1+ | 1+ | 1o | 1- | 1o

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data

Indices: Rz: 29 10 cm flux: 86 Flare: 5/23.3 Ca: 12.8 Ip: 0 Ia: 0

Solar Regions: (14929) S18

Sunspots

Sep. 4, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 6 09K — Kp: 1o | 1+ | 3- | 3- | 2- | 1+ | 1- | 1o

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- moderately bright SE moderately bright W. Limb 7 days later: NW- SW-

Indices: Rz: 25 10 cm flux: 83 Flare: 0/22.8 Ca: 13.6 Ip: 0 Ia: 0

Solar Regions: 14935 N16

Sunspots: 19845 N15 (B)4

Sep. 5, 1977

Item	Data
FLARES	
Bursts cm	
Bursts dm	
Bursts m	II (near 09); II (near 20)
Bursts Dkm	II (near 20)
SID	
X-Rays	
Ap 3 Q1 — Kp	1o, 0+, 0o, 1+, 1+, 0+, 1-, 1-
Aurora USSR / W.E.	
Cosmic Rays	
Green Corona	E. Limb 7 days earlier: NE- ; SE- ; W. Limb 7 days later: NW- ; SW-
Indices	Rz: 20 ; 10cm flux: 84 ; Flare: 5/23.9 ; Ca: 12.5 ; Ip: 0 ; Ia: 0
Solar Regions	(14944) S33
Sunspots	(19847) S35 (αp)3

Sep. 6, 1977

Item	Data
FLARES	
Bursts cm	
Bursts dm	
Bursts m	← noise storm →
Bursts Dkm	
SID	
X-Rays	
Ap 4 Q2 — Kp	0o, 1o, 1-, 1+, 1+, 1o, 0+, 1+
Aurora USSR / W.E.	
Cosmic Rays	
Green Corona	E. Limb 7 days earlier: NE- moderately bright ; SE ; W. Limb 7 days later: NW- no data ; SW- no data
Indices	Rz: 26 ; 10cm flux: 84 ; Flare: 6/22.5 ; Ca: 14.5 ; Ip: 0 ; Ia: 1
Solar Regions	14930 N25 (2)
Sunspots	19842 N24 (βp)5

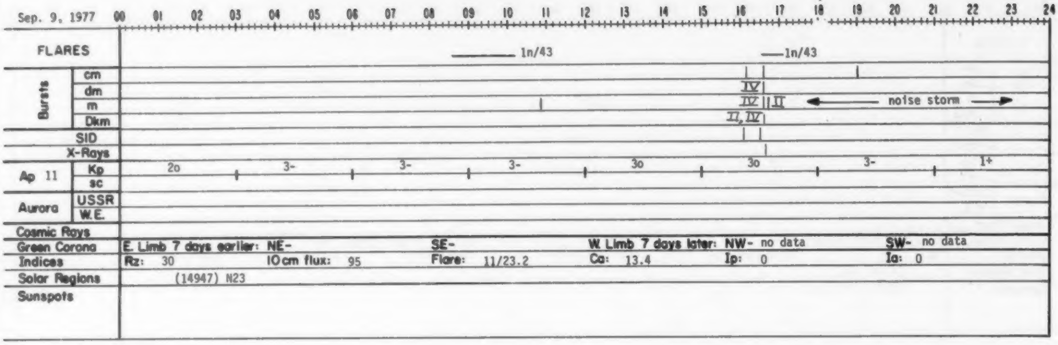
Sep. 7, 1977

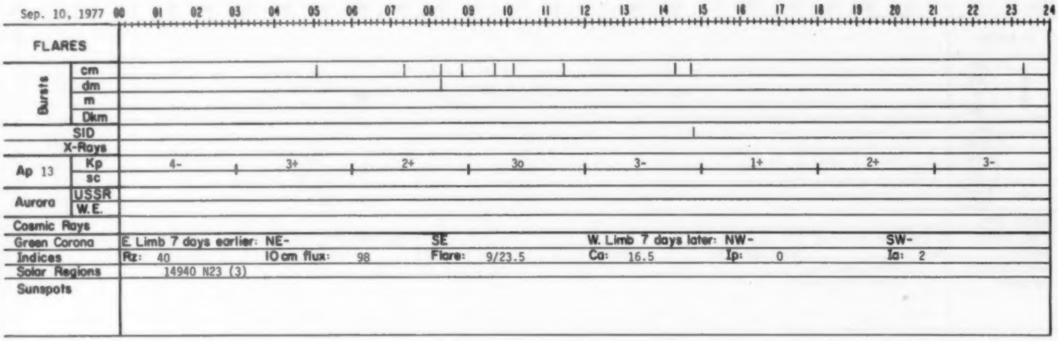
Item	Data
FLARES	1n/43
Bursts cm	
Bursts dm	II, IV
Bursts m	← noise storm → ; ← noise storm → ; II, IV
Bursts Dkm	II, IV
SID	
X-Rays	
Ap 6 Q7K — Kp	1-, 2o, 1o, 0+, 1-, 1-, 2o, 3+
Aurora USSR / W.E.	
Cosmic Rays	
Green Corona	E. Limb 7 days earlier: NE- moderately bright ; SE- ; W. Limb 7 days later: NW- ; SW-
Indices	Rz: 25 ; 10cm flux: 88 ; Flare: 8/22.1 ; Ca: 13.2 ; Ip: 0 ; Ia: 0
Solar Regions	(14939) N06
Sunspots	

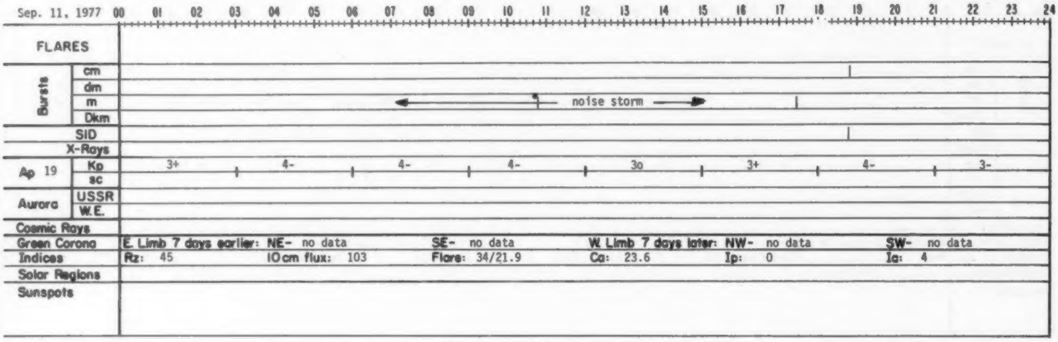
Sep. 8, 1977

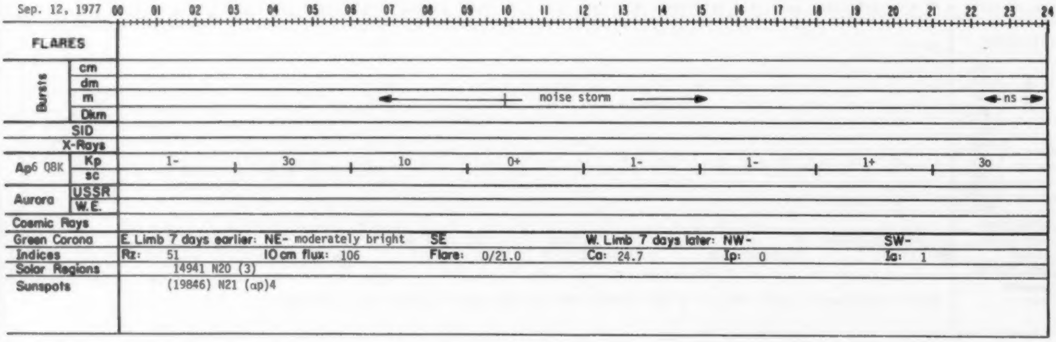
Item	Data
FLARES	1n/43
Bursts cm	
Bursts dm	
Bursts m	
Bursts Dkm	
SID	
X-Rays	
Ap 8 — Kp	3o, 2o, 3o, 1+, 1+, 1+, 2-, 2o
Aurora USSR / W.E.	
Cosmic Rays	
Green Corona	E. Limb 7 days earlier: NE- no data ; SE no data ; W. Limb 7 days later: NW- ; SW-
Indices	Rz: 18 ; 10cm flux: 90 ; Flare: 11/23.4 ; Ca: 13.4 ; Ip: 0 ; Ia: 1
Solar Regions	
Sunspots	

Remarks: Satellite-level proton event, detected by the 20-40 MeV GSFC telescope on IMP 8, began early in the day.


Sep. 9, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/43
1n/43
Bursts
cm
dm
m
Dkm
IV
IV II II
II, IV
noise storm
SID
X-Rays
Ap 11
Kp
sc
2o 3- 3- 3- 3o 3o 3- 1+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE-
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 30
10 cm flux: 95
Flare: 11/23.2
Ca: 13.4
Ip: 0
Ia: 0
Solar Regions
(14947) N23
Sunspots


Sep. 10, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 13
Kp
sc
4- 3+ 2+ 3o 3- 1+ 2+ 3-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE
W. Limb 7 days later: NW-
SW-
Indices
Rz: 40
10 cm flux: 98
Flare: 9/23.5
Ca: 16.5
Ip: 0
Ia: 2
Solar Regions
14940 N23 (3)
Sunspots


Sep. 11, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 19
Kp
sc
3+ 4- 4- 4- 3o 3+ 4- 3-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE- no data
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 45
10 cm flux: 103
Flare: 34/21.9
Ca: 23.6
Ip: 0
Ia: 4
Solar Regions
Sunspots


Sep. 12, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
ns
SID
X-Rays
Ap6 08K
Kp
sc
1- 3o 1o 0+ 1- 1- 1+ 3o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright
SE
W. Limb 7 days later: NW-
SW-
Indices
Rz: 51
10 cm flux: 106
Flare: 0/21.0
Ca: 24.7
Ip: 0
Ia: 1
Solar Regions
14941 N20 (3)
Sunspots
(19846) N21 (ap)4

Sep. 13, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

- FLARES:
- Bursts: cm, dm, m (← ns →), Dkm
- SID:
- X-Rays:
- Ap 28 D5 — Kp: 4- 3- 4o 4- 4- 5o 5+ 3+; sc
- Aurora — USSR: φ = 58° 0700 and 2100 (R_2B4); W.E.:
- Cosmic Rays:
- Green Corona — E. Limb 7 days earlier: NE- moderately bright SE- W. Limb 7 days later: NW- SW-
- Indices — Rz: 48 10cm flux: 112 Flare: 26/22.8 Ca: no data Ip: 0 Ia: 5
- Solar Regions:
- Sunspots:

Sep. 14, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

- FLARES:
- Bursts: cm, dm, m, Dkm
- SID:
- X-Rays:
- Ap 10 — Kp: 4o 4- 1o 1+ 1o 1+ 2- 2-; sc
- Aurora — USSR: φ = 59° 1700 and 1900 (HB1); W.E.:
- Cosmic Rays:
- Green Corona — E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- moderately bright SW-
- Indices — Rz: 47 10cm flux: 117 Flare: 19/24.0 Ca: 30.2 Ip: 0 Ia: 1
- Solar Regions: 14945 S24 (5) 14942 N17
- Sunspots: 19848 N16 (β)5

Sep. 15, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

- FLARES:
- Bursts: cm, dm, m, Dkm
- SID:
- X-Rays:
- Ap 9 — Kp: 2o 3o 3+ 3+ 2- 1- 1- 1-; sc
- Aurora — USSR: W.E.:
- Cosmic Rays:
- Green Corona — E. Limb 7 days earlier: NE- moderately bright SE- moderately bright W. Limb 7 days later: NW- moderately bright SW-
- Indices — Rz: 53 10cm flux: 119 Flare: 28/23.9 Ca: no data Ip: 0 Ia: 3
- Solar Regions: 14943 N08
- Sunspots: 19849 N08 (δ)5

Sep. 16, 1977

Hours: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

- FLARES: 2n/43
- Bursts: cm, dm, m (II,IV), Dkm (II)
- SID:
- X-Rays:
- Ap 7 — Kp: 1o 1+ 1+ 2o 3- 2o 3- 2o; sc
- Aurora — USSR: W.E.:
- Cosmic Rays:
- Green Corona — E. Limb 7 days earlier: NE- moderately bright SE moderately bright W. Limb 7 days later: NW- no data SW- no data
- Indices — Rz: 56 10cm flux: 119 Flare: 427/22.9 Ca: 22.0 Ip: 0 Ia: 2
- Solar Regions:
- Sunspots:

Sep. 17, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES: 2n/43

Bursts: cm; dm IV; m IV IV; Dkm

SID

X-Rays

Ap 10 — Kp / sc: 2+ 3- 4+ 2o 2- 1+ 1- 1-

Aurora: USSR; W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-

Indices: Rz: 53 10cm flux: 119 Flare: 21/24.0 Ca: 20.9 Ip: 0 Ia: 4

Solar Regions: (14948) N19 (2)

Sunspots

Sep. 18, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES: 1n/43

Bursts: cm; dm; m; Dkm

SID

X-Rays

Ap 6 Q10K — Kp / sc: 1+ 3o 2- 2- 2o 1- 1o 1+

Aurora: USSR; W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-

Indices: Rz: 59 10cm flux: 119 Flare: 90/23.9 Ca: 17.8 Ip: 0 Ia: 0

Solar Regions

Sunspots

Sep. 19, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm; dm; m ← noise storm — III IV / III IV → ← noise storm; Dkm

SID

X-Rays

Ap 42 D4 — Kp / sc: 1o 1- 1o 4o 6o 6- 6o 6-; 1143(9)

Aurora: USSR ϕ = 59° 1600-1700 (HA2); ϕ = 58° 1800, 2200-2300 (SB2); and ϕ = 57° 1900-2100 and 2400 (SB2); W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- moderately bright SE- moderately bright W. Limb 7 days later: NW- no data SW- no data

Indices: Rz: 58 10cm flux: 104 Flare: 2340/24.0 Ca: 16.3 Ip: 8 Ia: 7

Solar Regions: 14953 N27

Sunspots: (19852) N23 (8p)3

Remarks: Highest peak in satellite-level proton event occurred late in the day.

Sep. 20, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES: 2n/43

Bursts: cm; dm IV; m — ns → IV II ← noise storm; Dkm

SID

X-Rays

Ap 44 D3 — Kp / sc: 6- 5- 5o 5- 5o 5+ 4o 4o

Aurora: USSR ϕ = 58° 1600-1800 (R_1A2), 1900 (R_2B2), 2000-2200 (R_2B1) and 2300 (HP1); W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- SW-

Indices: Rz: 58 10cm flux: 108 Flare: 78/24.0 Ca: 15.6 Ip: 6 Ia: 7

Solar Regions

Sunspots

Sep. 21, 1977 — 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES	
Bursts cm	
Bursts dm	
Bursts m	ns; ns; noise storm; ns
Bursts Dkm	
SID	
X-Rays	
Ap 64 D2 Kp	4+ 5+ 6o 7- 5- 3- 4+ 7+
sc	▲2044(20)
Aurora USSR	
Aurora W.E.	
Cosmic Rays	
Green Corona	E. Limb 7 days earlier: NE- moderately bright SE- W. Limb 7 days later: NW- SW- moderately bright
Indices	Rz: 59 10cm flux: 104 Flare: 22/22.9 Ca: no data Ip: 1 Ia: 7
Solar Regions	(14964) S24
Sunspots	

Sep. 22, 1977 — 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

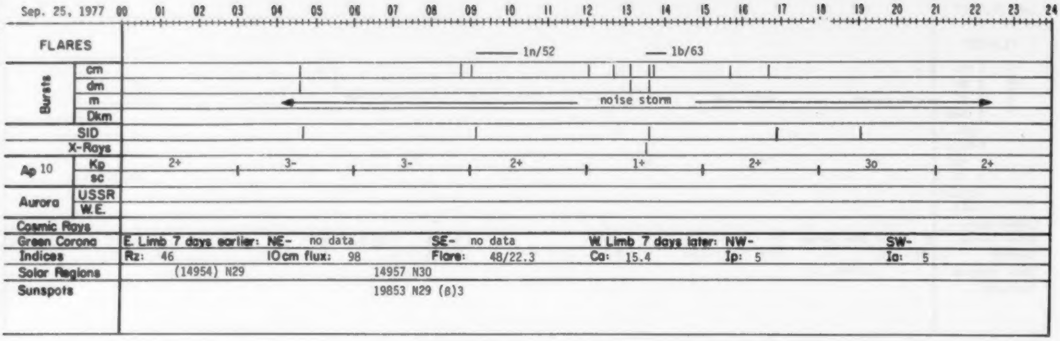
FLARES	1f/43; 1n/43
Bursts cm	
Bursts dm	
Bursts m	ns; noise storm
Bursts Dkm	
SID	
X-Rays	
Ap 63 D1 Kp	6+ 6o 4+ 4o 5- 6+ 7- 4o
sc	
Aurora USSR	ϕ = 58° 1800 (HB2) and 1800-1900 (HA1); ϕ = 56° 2000-2400 (R_{1-2}B3-4)
Aurora W.E.	
Cosmic Rays	Forbush decrease of about 7% began near 0000 UT, reached a maximum in the early part of the day, and returned to normal by Sept. 24.
Green Corona	E. Limb 7 days earlier: NE- moderately bright SE- moderately bright W. Limb 7 days later: NW- SW-
Indices	Rz: 42 10cm flux: 102 Flare: 24/22.4 Ca: no data Ip: 0 Ia: 6
Solar Regions	14951 N26 (14960) N15
Sunspots	19850 N23 αf2 CMP Sept. 21 N20

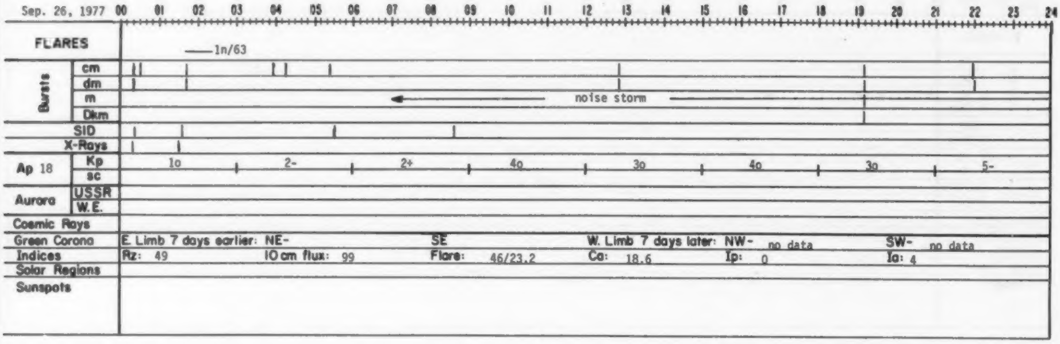
Sep. 23, 1977 — 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

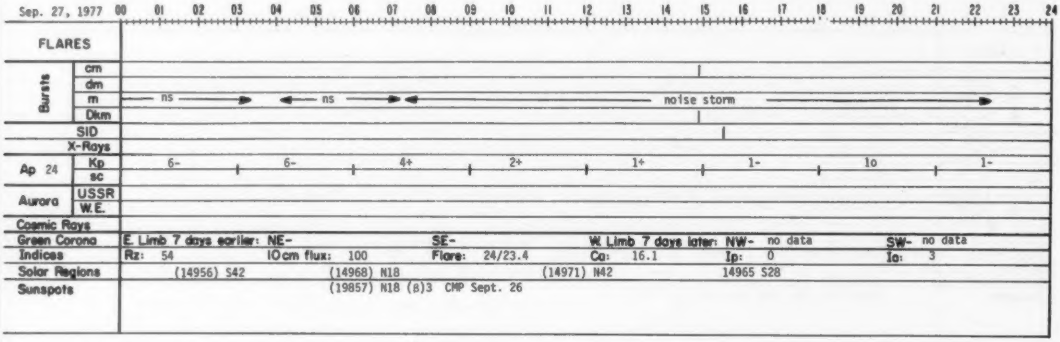
FLARES	
Bursts cm	
Bursts dm	
Bursts m	noise storm; noise storm
Bursts Dkm	
SID	
X-Rays	
Ap 21 Kp	3- 1+ 1o 4- 4o 5o 4+ 3+
sc	
Aurora USSR	ϕ = 59° 1700-1900 (R_1R1-2) and ϕ = 57° 2000 (R_2R2)
Aurora W.E.	
Cosmic Rays	
Green Corona	E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- SW- moderately bright
Indices	Rz: 41 10cm flux: 99 Flare: 17/22.4 Ca: 11.2 Ip: 0 Ia: 2
Solar Regions	14952 S25 (2)
Sunspots	19851 S23 β4 CMP Sept. 22

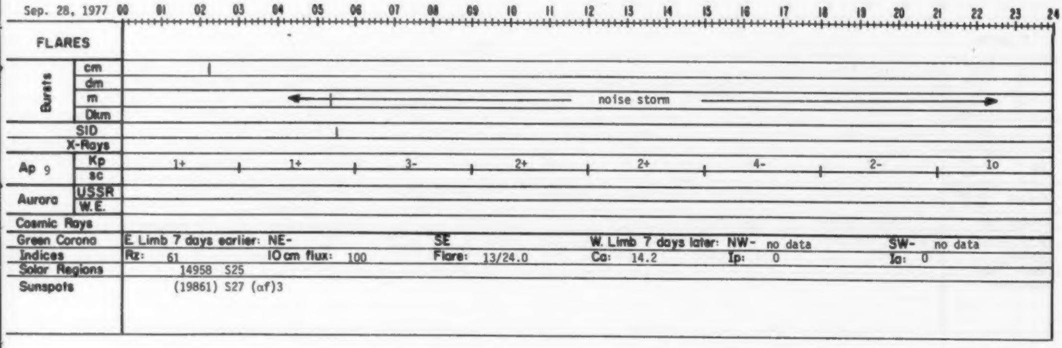
Sep. 24, 1977 — 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

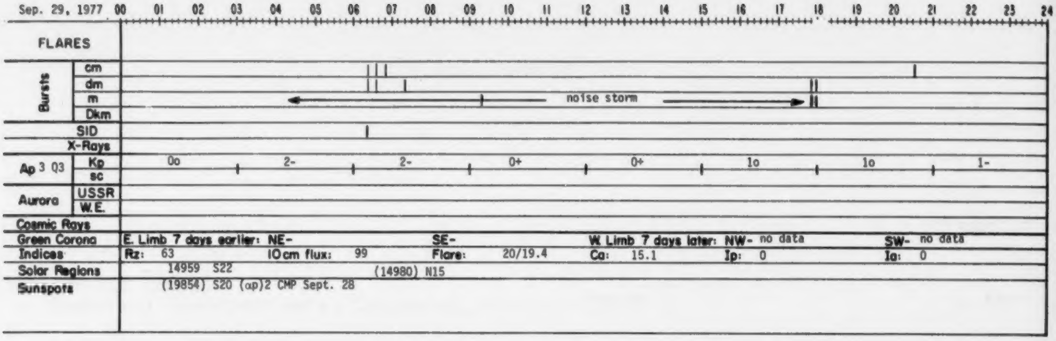
FLARES	1n/62
Bursts cm	
Bursts dm	IV
Bursts m	IV II; noise storm
Bursts Dkm	
SID	
X-Rays	
Ap 12 Kp	3o 4- 2+ 3o 2o 3- 2o 3-
sc	
Aurora USSR	
Aurora W.E.	
Cosmic Rays	Forbush decrease that began on Sept. 22 returned to normal near midday.
Green Corona	E. Limb 7 days earlier: NE- moderately bright SE moderately bright W. Limb 7 days later: NW- SW-
Indices	Rz: 48 10cm flux: 100 Flare: 11/21.7 Ca: no data Ip: 7 Ia: 7
Solar Regions	
Sunspots	

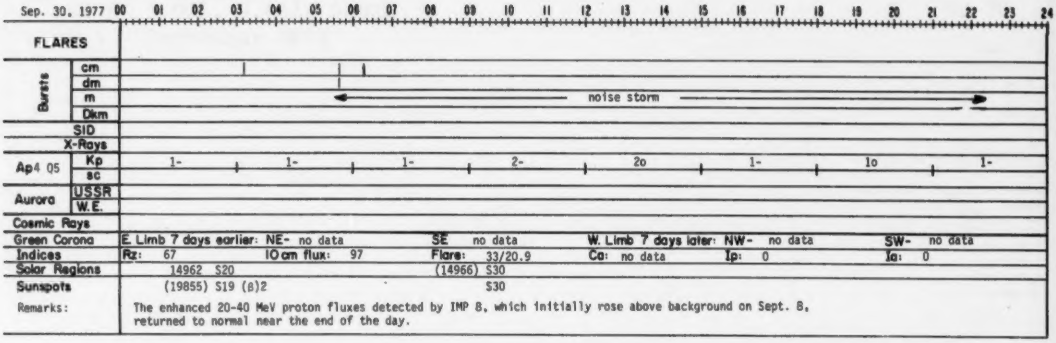

Sep. 25, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/52
1b/63
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 10
Kp
sc
2+ 3- 3- 2+ 1+ 2+ 3o 2+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE- no data
W. Limb 7 days later: NW-
SW-
Indices
Rz: 46
10 cm flux: 98
Flare: 48/22.3
Ca: 15.4
Ip: 5
Ia: 5
Solar Regions
(14954) N29
14957 N30
Sunspots
19853 N29 (β)3


Sep. 26, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/63
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 18
Kp
sc
1o 2- 2+ 4o 3o 4o 3o 5-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 49
10 cm flux: 99
Flare: 46/23.2
Ca: 18.6
Ip: 0
Ia: 4
Solar Regions
Sunspots


Sep. 27, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
ns
ns
noise storm
SID
X-Rays
Ap 24
Kp
sc
6- 6- 4+ 2+ 1+ 1- 1o 1-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE-
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 54
10 cm flux: 100
Flare: 24/23.4
Ca: 16.1
Ip: 0
Ia: 3
Solar Regions
(14956) S42
(14968) N18
(14971) N42
14965 S28
Sunspots
(19857) N18 (β)3 CMP Sept. 26


Sep. 28, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 9
Kp
sc
1+ 1+ 3- 2+ 2+ 4- 2- 1o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 61
10 cm flux: 100
Flare: 13/24.0
Ca: 14.2
Ip: 0
Ia: 0
Solar Regions
14958 S25
Sunspots
(19861) S27 (αf)3





REGIONAL FLARE INDEX

INCLUDES ALL FLARES

MC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
14929	S17	77/09/03.9	77/08/28	77/08/28	1.75	1.75	2
14935	N16	77/09/04.4	77/09/07	77/09/09	2.25	.75	2
14930	N25	77/09/06.4	77/08/30	77/09/13	111.44	7.43	27
14940	N22	77/09/10.9	77/09/07	77/09/07	.35	.35	1
14941	N21	77/09/12.3	77/09/06	77/09/08	2.06	.69	4
14942	N16	77/09/14.9	77/09/09	77/09/21	144.94	11.15	28
14943	N 8	77/09/15.6	77/09/07	77/09/22	2938.14	183.63	84
14948	N20	77/09/17.7	77/09/14	77/09/14	3.38	3.38	1
14964	S24	77/09/21.7	77/09/27	77/09/28	6.36	3.18	10
14951	N26	77/09/22.7	77/09/15	77/09/26	9.75	.81	3
14952	S25	77/09/23.2	77/09/18	77/09/28	112.88	10.26	40
14957	N29	77/09/25.8	77/09/25	77/09/26	17.16	8.58	4
14968	N18	77/09/27.1	77/09/30	77/09/30	4.62	4.62	2
14958	S25	77/09/28.3	77/10/02	77/10/02	.86	.86	1
14959	S21	77/09/29.0	77/09/24	77/09/24	.88	.88	1
14962	S20	77/09/30.0	77/09/24	77/09/27	17.45	4.36	10
14966	S30	77/09/30.2	77/09/28	77/09/28	1.90	1.90	1

Miscellaneous Data

Contents

	Page
Solar Radio Waves	
Spectral Observations, Culgoora, January 1978	56-58
Solar X-ray Radiation	
OSO-8 5.09Å, 5.68Å, 5.82Å June - September 1977	59-70

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS
JANUARY 1978

JAN 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0735	CULG	0000	0735								IS,W
			CULG				0016						IIIB,W
			CULG	0111.5	0112.5		0111.5	0112.5					IIIG,W
			CULG				0114						IIIB,W
			CULG	0213.5	0214		0213.5	0214					IIIG,W
			CULG				0402.5		1				IIIG
			CULG				0623	0624					IIIG,W
			CULG				0728.5	0729					IIIG,W
	2035	2400	CULG				2102	2147	1				IIIS
			CULG	2139	2400	1	2125	2147	1				IS
			CULG	2147.5	2149.5	2	2147.5	2149.5	2				IIIG
			CULG	2147	2400	2	2155	2400	2				IV
			CULG				2149	2216	3	2155	2200	2	II
			CULG							2150	2220	1	S.W.F.
			CULG				2152	2155	2	2152	2157	2	IIIG
			CULG				2205	2400	1				IIIN
			CULG				2230	2240	1				P
			CULG				2359		1				RSDP
02			CULG				0000	0736	1				IIIS
	0000	0736	CULG	0000	0100	1	0000	0245	1				IS
			CULG	0100	0736								IS,W
			CULG				0245	0736	1				IS
			CULG	2037	2400	1	2037	2400	1				IS
	2037	2400	CULG				2037	2400	1				IIIS
			CULG				2305.5		2				RSDP
03	0000	0736	CULG				0000	0736	1				IIIS
			CULG	0000	0736		0000	0736					IS,DC,W
			CULG	0308	0309	1	0308	0309	2	0308	0309	1	IIIG
			CULG				2037	2250	1				IS,DC
	2037	2400	CULG				2037	2400	1				IIIN
			CULG	2037	2400								IS,W
			CULG	2143.5	2145	1	2144	2145	1	2144	2145	1	IIIG
			CULG				2242.5	2245	2	2244	2245	2	IIIG
			CULG				2250	2400	1				IS,DC
04	0000	0737	CULG	0000	0737		0000	0737					IS,W
			CULG				0007	0008	1				IIIG
			CULG	0407.5	0412.5	2	0408	0412.5	3	0408	0411	2	IIIGG
			CULG	0601	0642	1	0051	0637.5	1				IIIN
	2037	2400	CULG	2258	2318		2309	2319					IIIN,W
05	0000	0737	CULG				0051	0711					IIIN,W
	2037	2400	CULG				2229	2400					IIIN,W
06			CULG	0000	0737								IS,W
	0000	0737	CULG	0432	0543	1	0000	0737	1				IIIN
	2039	2400	CULG	2039	2400	1	2039	2400	1				IS
			CULG				2039	2400	1				IIIN
07	0000	0728	CULG	0000	0100	1	0000	0100	1				IS,DC
			CULG				0000	0728	1				IIIN
			CULG	0100	0728	1	0100	0728	2				CONT,SLOWD
			CULG				0105	0130	2				IIIGN
			CULG				0304.5	0307	2	0305.5	0307.5	2	IIIG,V
	2039	2400	CULG	2039	2300	1	2039	2300	1				IS,DC,C
08	0000	0739	CULG	0000	0739		0000	0739					IS,W
			CULG				0000	0739	1				IIIN
			CULG				0001	0012.5	2	0001.5	0011.5	1	IIIGG
			CULG	0020	0120	1	0000	0205	1				CONT
			CULG				0208	0220	3	0208	0212	2	IIIGG,V
			CULG	0208	0400	2	0210	0400	2				IV
			CULG				0210	0239	2				II
			CULG							0211	0245	1	S.W.F.
			CULG				0708	0725	2				IIIGG
			CULG				0710	0739					IVW
			CULG	0710	0725	2							IV
			CULG				0712.5	0735	2				II

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS
JANUARY 1978

JAN 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08			CULG							0712	0735	1	S.W.F.
	2039	2400	CULG				2043	2258	1				IIIN
09	0000	0300	CULG										
	0309	0739	CULG				0500	0502	1				IIIG
	2040	2400	CULG				2317						IIIB,W
10	0000	0735	CULG				0327	0329	1				UNCLF.
			CULG				0645	0710					IIIN,W
			CULG	0656	0700	1	0654	0701	1				IIIGG
			CULG				0724	0735	1				CONT.
	2040	2400	CULG	2321.5	2322.5	1	2320	2325	2	2321	2325	1	IIIG,V
			CULG				2323.5	2335	2				II
			CULG	2335.5	2336.5	1	2334	2339	2	2334.5	2336	1	IIIGG,V
			CULG				2338	2355					II, W
			CULG				2340	2350	1				IIIN
11	0000	0740	CULG				0055	0246					IIIN,W
			CULG				0328	0337	1				II
			CULG				0521	0522	1				IIIG
	2040	2400	CULG				2241	2243	1				IIIG
12	0000	0720	CULG										
	2040	2400	CULG				2040	2400					IIIN,W
13			CULG	0142	0147	1	0142	0147	1				IIIGG
			CULG	0310	0311	1	0310	0311	1				IIIG,U
	0000	0740	CULG	0622	0652		0000	0610					IIIN,W
	2040	2400	CULG				2106.5						IIIB,W
			CULG				2214						IIIB,W
14	0000	0741	CULG				0140	0741					IS,W
	2021	2400	CULG	2041	2200	1	2041	2300	2				CONT
			CULG	2041	2400	1	2041	2400	2				IS,DC,C
			CULG				2041	2400	2				IIIS
15			CULG	0000	0741	1	0000	0741	2				IS,DC
	0000	0741	CULG				0000	0741	1				IIIS
			CULG				0426	0443	1				SCINTILLAT
	2041	2400	CULG	2041	2400	1	2041	2400	1				IS
			CULG				2041	2255					IIIN,W
16	0000	0741	CULG	0000	0030		0000	0030					IS,W
			CULG				0339.5	0340.5					IIIG,W
			CULG				0350	0352					IIIG,W
	2042	2400	CULG										
17	0000	0730	CULG										
	2043	2400	CULG				2212	2213	1				IIIG
			CULG				2324	2324.5	1				IIIG
18	0000	0742	CULG				0155.5						IIIB,W
			CULG				0353	0650	1				IS
			CULG				0357.5						IIIB,W
			CULG				0636.5	0638					IIIG,W
	2043	2400	CULG	2123	2123.5	1	2123	2124	1				IIIG
			CULG				2213						IIIB,W
19	0000	0743	CULG										
	2044	2400	CULG										
20	0000	0743	CULG										
	2044	2400	CULG										
21	0000	0743	CULG										
	2044	2400	CULG				2352.5		1				IIIB
22	0000	0744	CULG										
	2119	2400	CULG										
23	0000	0744	CULG				0004.5	0006	1				IIIG,V

58
Misc
Jan 78

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS
JANUARY 1978

JAN 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23			CULG	0012.5	0013		0012.5	0013					IIIG,W
			CULG	0350	0744								IS,W
	2044	2400	CULG	2044	2135	1	2044	2135	1				IS
			CULG				2308	2309					IIIG,W
			CULG				2313.5	2315					IIIG,W
24	0000	0744	CULG	0145.5		1							IIIB
			CULG				0410	0411					IIIG,U
	2045	2400	CULG				2055	2126					IIIN,W
25	0000	0744	CULG				0146	0147					IIIG,W,U
	2045	2400	CULG										
26	0000	0744	CULG				0233	0744					IS,W
			CULG				0244	0255	1				IIIGG,U
			CULG				0317	0744					IIIN,W
			CULG				0644	0645	1				IIIG,U
	2045	2400	CULG				2251	2255					IIIG,W
			CULG				2254	2400	1				IS
27	0000	0745	CULG				0000	0200	1				IS
			CULG				0117	0118					IIIG,W
			CULG				0430.5						IIIB,W
	2045	2400	CULG				2059	2400	1				IIIN
28	0000	0745	CULG	0023	0655	1	0000	0655	1				IIIN
			CULG	0220	0505		0310	0505					IS,W
			CULG	0432	0653		0432	0653					IIIN,W
	2045	2400	CULG				2045	2316	1				IIIN
			CULG	2055.5	2056	1	2055.5	2056.5	2				IIIG,U
29	0000	0740	CULG				0104		1				IIIB
			CULG	0342	0740	1	0203	0740	1				IIIN
			CULG	0345.5	0346.5	1	0345.5	0347.5	2				IIIG,V,U
			CULG	0400	0740		0342	0740					IS,W
			CULG				0548	0549	1				IIIG,U
			CULG				0738.5	0740	2				IIIG,U
	2045	2400	CULG				2045	2400	1				IS
			CULG				2150	2400					IIIN,W
30			CULG				0000	0310	1				IS
	0000	0541	CULG				0000	0240					IIIN,W
			CULG				0118	0119	1				IIIG
			CULG				0325	0333					II
	2036	2400	CULG				2108	2110	1				IIIG
31	0000	0745	CULG	0041	0602	1	0320	0602	1				IIIN
			CULG				0510	0745					IS,W
	2045	2400	CULG				2103	2400					IIIN,W

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES

JUNE 1977

Si XV (5.09Å) Hourly Averages (-Log (flux), ergs/cm^2 s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.48	5.53	5.37	5.55	5.45	5.52	M	5.15	5.64	5.64	5.47	M	5.61	5.83	5.83	M	5.80	5.90	5.61	5.04	4.83	5.03	5.33	*-1.
2	5.44	5.59	5.32	5.54	5.56	5.48	M	5.21	5.10	M	5.58	M	5.08	5.24	5.15	5.05	5.21	M	5.21	5.04	5.11	4.94	4.79	*-1.
3	4.72	4.66	4.63	4.87	5.04	4.70	M	4.94	4.98	M	4.69	5.21	5.20	4.84	5.11	5.06	4.93	4.61	4.91	4.90	5.05	4.90	M	5.27
4	5.17	5.20	5.16	5.24	5.30	5.06	5.06	5.28	5.03	4.92	4.96	5.20	4.48	4.99	5.13	5.10	5.29	5.22	4.95	5.40	4.91	5.24	M	5.51
5	5.30	5.39	5.00	5.53	5.56	5.41	5.61	5.44	5.53	5.42	5.49	5.47	5.52	5.62	5.49	5.54	5.51	5.60	5.62	5.60	5.74	5.37	M	5.79
6	5.56	5.79	5.74	5.27	5.53	5.66	5.53	M	5.71	5.17	5.35	5.70	5.63	5.72	M	5.78	5.61	5.60	5.71	5.01	5.25	5.53	5.61	M
7	5.62	5.72	5.63	5.37	5.76	5.84	5.66	M	5.72	5.71	5.82	5.80	5.94	5.70	5.66	5.64	5.72	5.76	5.78	5.33	5.46	5.50	AI	5.22
8	5.41	5.51	5.51	5.55	5.57	5.57	5.65	5.61	5.57	5.74	5.81	5.51	5.69	5.73	5.70	5.56	5.58	5.74	5.83	5.72	5.73	5.69	5.79	5.19
9	5.36	5.50	5.61	5.74	5.78	5.70	5.81	5.77	5.80	5.74	5.74	5.78	5.81	5.44	5.85	5.84	5.82	5.86	5.27	5.55	5.14	5.81	5.95	5.56
10	5.82	5.93	5.92	5.90	5.72	5.75	5.90	5.87	5.68	5.54	5.84	5.88	5.99	5.83	5.77	5.93	5.86	5.37	5.90	5.94	5.82	5.84	5.70	AU
11	5.58	5.82	5.95	5.95	5.92	5.97	5.76	5.87	5.92	5.86	5.94	5.93	5.95	5.96	5.91	5.92	5.99	5.72	5.94	5.95	5.57	5.70	5.73	A
12	5.98	6.02	5.96	5.85	5.92	5.88	5.50	5.82	5.72	5.44	6.08	6.06	5.93	6.10	6.09	5.82	6.12	6.14	6.12	6.17	6.21	6.36	6.39	*-1.
13	6.30	6.36	6.39	6.41	6.14	4.86	5.19	5.76	5.89	6.03	6.23	6.19	6.27	6.33	6.31	6.09	6.15	6.21	6.03	5.84	6.15	6.13	6.23	6.40
14	6.26	6.13	5.96	5.60	5.92	6.37	6.40	6.37	6.43	6.38	6.38	6.41	6.28	5.97	6.12	5.99	6.18	6.19	6.27	6.44	6.49	6.43	6.50	6.64
15	6.50	6.41	6.37	6.28	6.29	6.40	6.32	6.20	6.10	6.19	6.33	6.06	6.10	6.15	6.10	6.08	5.71	5.67	6.16	6.34	6.49	6.31	6.36	6.24
16	6.43	6.29	6.04	6.00	6.09	5.80	6.14	6.14	5.88	6.10	6.25	6.27	5.65	5.94	5.91	5.97	5.87	5.94	6.04	6.25	5.97	5.89	5.84	*-1.
17	6.11	6.00	6.19	6.30	6.23	5.68	5.76	5.73	5.96	5.93	5.85	M	M	6.07	6.16	6.14	6.01	6.12	6.07	6.24	6.18	6.06	M	5.54
18	5.88	5.99	6.04	6.02	6.12	5.92	5.76	5.96	5.97	5.96	5.83	M	6.10	6.04	6.02	6.00	5.84	5.99	5.94	6.05	5.94	M	M	M
19	6.07	5.84	5.98	5.86	5.87	5.93	6.01	6.08	M	6.08	M	5.54	6.12	5.92	5.74	6.01	5.98	5.85	M	5.98	5.63	5.84	M	M
20	5.47	5.41	5.36	5.51	5.66	5.88	6.03	5.90	5.90	5.96	5.75	5.83	5.91	5.73	5.75	5.82	5.95	6.01	6.05	5.92	6.13	5.82	6.00	6.04
21	5.96	5.49	5.66	5.94	6.13	6.10	5.78	5.87	5.92	5.83	5.58	5.53	5.63	5.45	5.68	5.54	5.55	5.30	M	5.34	5.53	5.60	5.69	5.50
22	5.51	5.71	5.76	5.64	5.65	5.70	5.64	5.39	5.41	5.25	M	5.36	5.59	5.57	5.39	4.76	4.69	5.09	M	5.27	5.24	5.11	5.30	M
23	M	5.22	M	M	5.37	5.53	5.44	5.50	5.37	5.48	5.23	4.76	M	M	5.27	M	M	5.44	M	M	5.37	5.25	5.09	4.94
24	*-1.	4.49	4.92	5.02	4.93	M	4.55	4.56	M	M	4.09	4.13	4.37	M	4.44	4.82	M	5.00	4.52	4.54	5.06	4.99	4.99	M
25	M	4.96	4.71	4.84	4.82	4.90	4.95	4.93	4.91	4.81	4.76	4.60	4.89	4.88	4.90	M	M	4.98	M	M	4.75	M	4.62	4.55
26	M	M	M	M	4.39	M	M	4.52	M	M	M	M	M	M	M	M	4.32	4.41	4.80	M	4.68	M	4.60	4.84
27	M	4.95	M	M	4.61	M	M	4.73	4.97	5.02	4.72	M	4.92	4.97	M	4.92	5.12	5.27	5.11	M	5.20	4.91	4.32	5.06
28	5.00	5.17	5.10	M	4.39	4.97	5.21	5.20	5.14	5.11	5.43	5.51	5.55	5.48	M	5.44	5.56	5.40	4.64	5.37	5.28	5.37	5.40	5.33
29	4.96	5.07	5.00	4.90	5.12	4.66	4.59	4.92	5.11	5.21	4.96	5.33	5.39	5.30	M	5.53	5.55	M	5.52	5.46	5.49	5.17	M	5.13
30	5.44	5.46	5.42	5.39	5.34	5.63	5.73	5.65	5.54	5.53	5.62	5.60	5.43	5.60	M	5.56	5.64	M	5.61	5.72	5.60	5.71	5.82	5.77

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

These June 1977 data are more accurate and replace those data published in SGD 402 Part II, pages 66-68, February 1978 issue.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
JUNE 1977

Si XIII (5.68A) Hourly Averages (-Log (flux), ergs/cm^{2}s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.88	5.91	5.77	6.04	5.80	5.87	M	5.51	6.60	6.29	5.91	M	6.02	6.23	6.36	M	6.23	7.46	6.01	5.41	5.25	5.39	5.67	*-1.
2	5.91	6.11	5.69	6.02	5.94	5.90	M	5.62	5.55	M	6.10	M	5.41	5.66	5.66	5.50	5.70	M	5.65	5.49	5.55	5.33	5.17	*-1.
3	5.17	5.10	5.04	5.27	5.47	5.11	M	5.33	5.36	M	5.04	5.52	5.59	5.25	5.53	5.46	5.34	4.97	5.26	5.21	5.36	5.22	M	5.61
4	5.56	5.64	5.52	5.62	5.81	5.40	5.37	5.72	5.33	5.28	5.29	5.63	4.91	5.36	5.54	5.47	5.69	5.54	5.31	5.74	5.61	5.56	M	5.88
5	5.66	5.78	5.32	5.86	5.91	5.80	6.04	5.71	5.83	5.87	5.81	5.79	5.84	6.01	5.82	5.82	5.83	5.90	5.93	5.92	6.09	5.65	M	6.29
6	5.86	6.26	6.18	5.63	5.85	5.97	5.85	M	6.37	5.56	5.72	6.04	5.88	6.21	M	6.08	5.95	6.04	6.09	5.31	5.62	5.94	5.97	M
7	5.98	6.01	5.95	5.66	6.00	6.20	5.99	M	6.02	6.06	6.17	6.21	6.45	6.11	6.09	6.28	6.18	6.08	6.16	5.66	5.81	5.90	AO	5.61
8	5.79	5.95	5.79	5.90	5.94	5.88	6.09	5.89	5.95	6.05	6.26	5.80	6.07	6.08	6.02	5.91	5.87	6.06	6.23	6.11	6.06	6.85	6.15	5.51
9	5.75	5.86	5.87	6.00	6.12	5.97	6.16	6.14	6.24	6.05	6.05	6.14	6.20	5.85	6.22	6.10	6.13	6.24	5.68	5.92	5.43	6.24	6.35	5.91
10	6.28	6.25	6.25	6.34	6.09	6.05	6.31	6.17	6.14	5.97	6.24	6.21	6.32	6.37	6.19	6.38	6.28	5.68	6.25	6.35	6.27	6.14	6.07	AY
11	5.91	6.22	6.34	6.35	6.39	6.39	5.98	6.21	6.37	6.18	6.29	6.32	6.30	6.25	6.19	6.27	6.57	6.00	6.36	6.20	5.88	6.01	6.14	A
12	6.11	6.37	6.36	6.26	6.24	6.23	6.00	6.25	6.07	5.85	6.46	6.44	6.27	6.59	6.42	6.17	6.47	6.54	6.45	6.63	6.63	6.97	7.15	*-1.
13	6.83	6.76	7.15	6.98	6.48	5.24	5.61	6.16	6.45	6.60	6.84	6.75	7.91	7.41	7.07	6.53	6.59	6.99	6.39	6.32	7.01	6.64	6.86	6.88
14	6.92	6.66	6.43	6.13	6.40	7.05	6.89	6.94	6.97	7.03	6.83	6.52	6.92	6.44	6.52	6.51	6.98	7.01	6.69	6.81	7.30	7.00	7.08	7.13
15	6.89	6.72	6.97	6.66	6.69	6.77	6.85	6.61	6.53	6.59	6.65	6.43	6.59	6.51	6.76	6.47	6.27	6.09	6.46	6.74	6.92	6.87	7.50	6.60
16	6.82	6.57	6.45	6.38	6.49	6.17	6.32	6.52	6.27	6.68	6.61	6.46	6.03	6.31	6.18	6.40	6.17	6.23	6.43	6.59	6.38	6.29	6.27	*-1.
17	6.42	6.40	6.48	6.74	6.35	5.94	6.07	6.15	6.24	6.29	6.08	M	M	7.53	6.47	6.63	6.26	6.65	6.64	6.57	6.18	6.41	M	5.77
18	6.21	6.31	6.33	6.42	6.21	6.24	6.14	6.24	6.12	6.31	6.21	M	6.46	6.18	6.66	6.87	6.05	6.27	6.27	6.41	M	M	M	M
19	7.70	M	5.91	5.70	5.75	6.10	6.03	5.76	M	5.89	M	5.10	7.02	6.25	5.96	6.01	6.24	6.29	M	6.25	5.94	6.28	M	M
20	5.83	5.67	5.73	5.82	6.02	6.11	6.41	6.12	6.17	6.26	6.01	6.13	6.24	6.02	5.98	6.15	6.30	6.19	6.35	6.27	6.43	6.10	6.30	6.57
21	6.23	5.84	6.13	6.29	6.38	6.47	6.12	6.22	6.28	6.44	5.92	5.89	6.01	5.78	6.08	6.23	5.92	5.66	M	5.70	5.93	5.96	6.13	5.83
22	5.87	6.10	6.09	6.18	6.05	6.06	6.05	5.77	5.68	5.56	M	5.69	6.00	6.09	5.82	5.07	5.00	5.47	M	5.66	5.70	5.58	5.74	M
23	M	5.67	M	M	5.79	5.91	5.82	5.95	5.71	5.87	5.54	5.17	M	M	5.76	M	M	5.83	M	M	5.80	5.68	5.51	5.38
24	*-1.	4.90	5.37	5.43	5.36	M	4.95	4.95	M	M	4.48	4.52	4.78	M	4.90	5.23	M	5.45	5.03	5.05	5.56	5.51	5.46	M
25	M	5.40	5.18	5.29	5.32	5.37	5.44	5.44	5.40	5.28	5.22	5.03	5.36	5.37	5.36	M	M	5.49	M	M	5.26	M	5.15	5.13
26	M	M	M	M	4.85	M	M	5.07	M	M	M	M	M	M	M	M	4.82	4.85	5.28	M	5.21	M	5.07	5.31
27	M	5.36	M	M	5.02	M	M	5.17	5.39	5.45	5.14	M	5.35	5.38	M	5.31	5.59	5.74	5.57	M	5.65	5.29	4.74	5.43
28	5.32	5.55	5.58	M	4.72	5.34	5.63	5.59	5.47	5.44	5.82	5.98	5.97	5.87	M	5.79	5.96	5.81	4.94	5.75	5.66	5.74	5.75	5.69
29	5.31	5.44	5.31	5.22	5.44	4.99	4.94	5.27	5.46	5.57	5.39	5.74	5.79	5.67	M	5.95	5.91	M	5.93	5.82	5.85	5.54	M	5.51
30	5.85	5.95	5.85	5.74	5.80	6.04	6.29	6.06	5.98	5.92	6.04	6.04	5.94	5.99	M	5.87	6.08	M	6.08	6.21	6.00	6.15	6.31	6.14

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

These June 1977 data are more accurate and replace those data published in SGD 402 Part II, pages 66-68, February 1978 issue.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
JUNE 1977

Si XII (5.82Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.54	5.53	5.44	5.60	5.57	5.61	M	5.38	5.75	5.69	5.59	M	5.72	5.78	5.83	M	5.80	5.89	5.67	5.41	5.22	5.31	5.48	*-1.
2	5.55	5.61	5.54	5.64	5.63	5.60	M	5.49	5.37	M	5.58	M	5.45	5.48	5.39	5.44	5.41	M	5.44	5.31	5.37	5.24	5.13	*-1.
3	5.07	5.05	5.04	5.15	5.23	5.05	M	5.19	5.27	M	5.01	5.38	5.38	5.31	5.37	5.29	5.27	5.04	5.19	5.19	5.25	5.23	M	5.42
4	5.37	5.32	5.33	5.36	5.44	5.29	5.29	5.40	5.34	5.27	5.22	5.33	5.02	5.22	5.27	5.26	5.33	5.31	5.21	5.39	5.23	5.37	M	5.49
5	5.44	5.44	5.27	5.49	5.52	5.44	5.58	5.49	5.48	5.45	5.49	5.45	5.54	5.56	5.52	5.48	5.53	5.51	5.57	5.59	5.65	5.48	M	5.68
6	5.60	5.67	5.67	5.44	5.55	5.57	5.59	M	5.65	5.37	5.44	5.56	5.62	5.71	M	5.63	5.60	5.62	5.64	5.28	5.38	5.49	5.59	M
7	5.59	5.63	5.58	5.51	5.69	5.74	5.63	M	5.62	5.51	5.66	5.64	5.63	5.64	5.61	5.64	5.66	5.61	5.64	5.46	5.46	5.49	AQ	5.39
8	5.46	5.52	5.53	5.54	5.55	5.54	5.57	5.60	5.55	5.65	5.67	5.55	5.64	5.64	5.60	5.58	5.57	5.63	5.72	5.66	5.61	5.59	5.66	5.47
9	5.47	5.53	5.60	5.63	5.65	5.61	5.67	5.66	5.69	5.67	5.67	5.71	5.74	5.59	5.74	5.73	5.71	5.73	5.58	5.61	5.41	5.69	5.77	5.62
10	5.77	5.78	5.80	5.75	5.70	5.72	5.77	5.74	5.70	5.63	5.72	5.79	5.78	5.73	5.74	5.74	5.79	5.55	5.77	5.82	5.78	5.82	5.76	AW
11	5.62	5.71	5.79	5.83	5.80	5.82	5.78	5.77	5.82	5.78	5.85	5.85	5.82	5.82	5.81	5.80	5.86	5.73	5.90	5.80	5.69	5.73	5.74	A
12	5.78	5.84	5.86	5.82	5.82	5.80	5.64	5.83	5.80	5.62	5.94	5.90	5.87	5.96	5.95	5.88	6.02	6.04	6.03	6.01	6.06	6.22	6.15	*-1.
13	6.19	6.18	6.20	6.20	6.16	5.29	5.52	5.85	6.00	5.98	6.03	6.10	6.09	6.13	6.11	6.13	6.09	6.11	6.10	6.02	6.09	6.07	6.08	6.20
14	6.13	6.15	6.07	5.92	6.00	6.23	6.26	6.24	6.24	6.26	6.31	6.22	6.21	6.07	6.13	6.07	6.15	6.13	6.20	6.31	6.31	6.35	6.43	6.39
15	6.32	6.31	6.31	6.28	6.23	6.34	6.27	6.27	6.30	6.28	6.30	6.13	6.16	6.22	6.18	6.15	5.97	5.89	6.19	6.19	6.34	6.24	6.18	6.17
16	6.29	6.23	6.19	6.10	6.10	5.99	6.18	6.14	5.96	6.14	6.20	6.19	5.94	6.02	5.96	6.08	5.96	5.99	6.10	6.02	6.00	5.99	6.03	*-1.
17	6.01	5.99	6.09	6.14	6.06	5.79	5.91	5.82	5.92	5.87	5.82	M	M	5.94	6.11	5.99	5.94	6.09	6.17	6.13	5.91	5.95	M	5.98
18	5.87	5.84	6.02	6.00	5.91	5.88	5.82	5.97	5.86	5.89	5.95	M	6.03	5.99	5.70	5.87	5.71	6.03	5.68	5.67	5.84	M	M	M
19	5.92	5.70	5.56	5.10	5.05	5.25	5.60	M	M	7.84	M	5.54	5.45	5.64	5.74	5.87	5.86	5.76	M	5.87	5.69	5.76	M	M
20	5.58	5.61	5.48	5.62	5.74	5.83	5.93	5.95	5.85	5.89	5.79	5.80	5.75	5.82	5.84	5.82	5.88	5.92	5.95	5.84	6.00	5.91	5.92	5.99
21	5.97	5.84	5.83	5.95	5.99	6.01	5.85	5.95	5.93	5.83	5.75	5.68	5.74	5.61	5.69	5.70	5.70	5.51	M	5.51	5.61	5.64	5.67	5.60
22	5.57	5.68	5.70	5.63	5.63	5.64	5.65	5.51	5.57	5.42	M	5.45	5.59	5.58	5.50	5.15	5.08	5.26	M	5.43	5.43	5.40	5.44	M
23	M	5.41	M	M	5.49	5.54	5.48	5.51	5.47	5.50	5.48	5.24	M	M	5.40	M	M	5.53	M	M	5.47	5.49	5.39	5.26
24	*-1.	4.95	5.23	5.29	5.21	M	5.05	5.05	M	M	4.50	4.56	4.76	M	4.89	5.11	M	5.26	5.01	5.05	5.31	5.28	5.24	M
25	M	5.24	5.14	5.21	5.24	5.21	5.26	5.28	5.24	5.14	5.13	4.99	5.23	5.24	5.22	M	M	5.27	M	M	5.16	M	5.07	5.08
26	M	M	M	M	4.74	M	M	4.98	M	M	M	M	M	M	M	M	4.81	4.88	5.11	M	5.09	M	5.04	5.16
27	M	5.24	M	M	5.09	M	M	5.07	5.21	5.24	5.14	M	5.23	5.25	M	5.18	5.28	5.36	5.36	M	5.39	5.31	4.93	5.29
28	5.28	5.39	5.41	M	4.89	5,30	5.38	5.43	5.39	5.40	5.47	5.51	5.56	5.55	M	5.51	5.60	5.51	5.08	5.46	5.46	5.47	5.50	5.46
29	5.19	5.27	5.21	5.14	5.26	5.10	4.93	5.16	5.26	5.31	5.22	5.42	5.45	5.39	M	5.53	5.56	M	5.57	5.54	5.54	5.46	M	5.33
30	5.55	5.52	5.54	5.49	5.49	5.59	5.70	5.63	5.59	5.62	5.61	5.60	5.58	5.62	M	5.65	5.64	M	5.66	5.63	5.60	5.65	5.74	5.69

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

These June 1977 data are more accurate and replace those data published in SGD 402 Part II, pages 66-68, February 1978 issue.

62
Misc
Jul 77

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES

JULY 1977

Si XV (5.09Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.64	M	5.77	5.53	5.54	5.60	5.68	5.76	5.72	5.66	5.67	5.67	M	5.64	5.60	M	M	M	M	5.00	4.80	5.63	5.67	*-1.
2	5.75	5.69	5.76	5.78	5.70	5.78	5.64	5.58	5.64	5.67	5.61	5.76	5.69	5.76	5.78	M	5.76	5.73	5.77	5.78	5.69	5.59	5.40	*-1.
3	5.67	M	M	5.80	5.76	5.84	5.89	5.88	5.85	5.69	5.68	5.70	5.89	5.91	5.67	5.52	5.55	5.74	5.73	5.57	5.61	5.52	5.55	5.45
4	5.39	5.64	5.59	5.61	5.71	5.78	5.66	5.63	5.82	5.78	5.84	5.84	5.85	5.69	5.85	5.66	5.70	5.57	M	5.94	5.77	5.88	5.50	AC
5	5.81	5.64	5.69	5.70	5.23	5.64	5.52	5.44	5.58	5.97	5.85	5.85	5.78	M	5.77	5.92	5.94	5.80	5.98	5.95	5.94	5.96	5.46	5.91
6	5.60	5.67	5.68	5.67	5.90	5.64	5.79	5.79	5.74	5.60	5.83	5.53	5.40	5.38	5.04	5.55	5.59	5.08	5.64	5.34	5.63	5.65	5.61	M
7	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.55
8	5.95	6.08	5.75	5.88	5.55	5.90	5.68	6.19	5.99	M	M	M	M	M	M	M	M	M	M	M	6.43	6.34	6.40	6.67
9	M	6.45	6.54	6.44	6.37	6.49	6.26	6.50	6.41	6.35	6.44	6.48	5.58	6.13	5.89	6.40	6.52	6.55	M	5.99	6.19	6.46	6.53	6.67
10	6.83	6.66	6.76	6.64	6.82	6.63	6.66	6.74	6.64	6.84	6.90	6.85	6.74	6.87	6.47	6.73	6.71	6.75	6.73	6.35	6.33	6.69	6.81	*-1.
11	6.32	6.44	6.75	6.62	6.27	6.02	6.12	5.77	6.13	6.02	5.20	5.76	6.02	6.65	6.36	6.71	7.40	7.22	7.33	7.36	7.12	7.42	7.34	6.96
12	6.30	5.90	5.70	5.99	6.20	6.43	6.53	6.55	5.92	5.88	5.94	5.92	5.87	6.06	6.14	6.28	6.51	6.69	6.12	6.60	6.65	6.58	6.52	6.75
13	6.46	6.10	6.63	6.73	6.82	6.60	6.73	5.79	6.20	6.50	6.69	6.42	6.49	6.09	6.57	6.60	6.05	6.23	6.55	6.86	6.95	6.88	5.96	6.23
14	6.76	6.95	6.95	7.24	6.75	6.94	M	7.04	6.78	7.05	6.88	M	5.02	6.72	6.54	6.39	5.80	6.69	6.62	6.73	6.79	6.84	6.77	6.73
15	6.66	6.72	6.55	6.58	6.58	6.60	6.35	6.58	6.17	5.91	6.56	6.52	6.43	6.58	6.09	6.21	6.53	6.70	6.59	6.76	6.66	6.49	6.86	6.75
16	6.58	6.70	6.74	6.73	6.36	6.69	6.61	6.72	6.86	6.85	6.59	M	6.71	6.82	6.80	6.52	6.82	6.85	6.82	6.85	6.86	6.91	6.73	6.86
17	6.80	6.81	6.88	6.60	6.63	6.77	6.64	6.87	6.89	6.88	6.78	6.73	6.93	6.81	6.82	6.71	6.81	6.75	6.75	6.83	6.80	6.67	6.76	AL
18	6.69	6.72	6.70	6.73	6.56	6.63	6.54	6.51	6.62	M	6.43	6.43	6.54	6.44	6.11	5.52	5.87	6.21	6.29	6.41	6.43	6.41	6.52	6.46
19	6.36	M	M	6.52	6.46	6.35	6.80	6.40	M	M	M	M	M	M	M	6.34	6.27	6.63	M	6.69	6.11	M	5.30	M
20	M	4.22	M	4.68	4.95	M	5.19	M	5.41	5.55	M	M	M	M	5.93	M	M	6.18	M	M	6.33	M	6.43	6.32
21	6.21	6.34	M	6.23	6.45	M	6.45	M	6.59	M	M	M	6.44	M	6.43	6.49	M	6.42	6.44	6.53	6.37	M	6.48	5.79
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
23	M	6.06	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6.29	6.23	6.00	6.03	M	M	5.84
24	M	M	M	M	6.24	M	M	M	M	M	M	6.33	M	6.40	6.56	5.90	6.20	6.27	M	M	6.42	6.22	*-1.	6.43
25	6.57	6.55	6.35	6.37	6.30	5.90	6.08	6.29	M	5.75	M	6.27	M	6.03	6.31	6.19	6.13	6.24	6.33	6.18	5.82	5.90	M	6.12
26	5.96	5.74	M	M	5.98	5.95	6.10	6.20	M	6.22	6.14	6.16	6.40	6.32	6.20	6.41	6.43	6.21	5.68	6.18	6.42	6.03	6.17	6.03
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6.60
28	6.71	6.51	6.57	6.25	6.36	6.53	6.58	6.51	6.15	6.09	6.70	M	6.51	6.51	5.63	5.41	5.85	5.91	6.08	6.19	6.23	6.14	6.15	6.20
29	6.12	6.21	6.39	6.04	6.39	6.46	M	6.25	6.35	6.29	6.24	6.17	6.35	6.30	6.49	6.22	5.82	6.12	6.11	6.15	6.58	6.39	6.29	M
30	6.40	6.46	6.28	6.01	6.06	6.32	6.02	5.82	5.32	M	6.00	6.23	6.31	6.44	6.25	6.31	6.52	6.62	6.34	6.53	6.39	6.20	M	M
31	6.13	M	6.00	6.73	6.84	6.61	M	M	6.80	M	M	M	M	M	6.74	M	M	M	6.57	6.00	5.86	5.80	5.68	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
JULY 1977

Si XIII (5.68A) Hourly Averages (-Log (flux), ergs/cm^{2}s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	6.02	M	6.23	5.98	5.94	6.10	6.05	6.20	6.13	6.09	6.04	6.05	M	6.05	6.21	M	M	M	M	5.32	5.08	6.02	6.15	*-1.
2	6.17	6.08	6.19	6.24	6.00	6.16	6.08	5.96	6.07	6.26	5.99	6.43	6.09	6.38	6.25	M	6.20	6.15	6.36	6.18	6.14	5.95	5.80	*-1.
3	6.09	M	M	6.30	6.09	6.24	6.49	6.43	6.35	6.24	6.15	6.11	6.45	6.33	6.11	6.19	6.06	6.21	6.05	6.09	6.17	5.95	6.13	5.89
4	5.96	6.08	6.12	6.08	6.21	6.39	6.13	6.12	6.31	6.21	6.28	6.32	6.27	6.07	6.29	6.10	6.04	6.01	M	6.33	6.19	6.37	5.82	AD
5	6.27	6.09	6.17	6.12	5.70	6.09	5.94	5.84	5.95	6.42	6.23	6.27	6.11	M	6.38	6.38	6.86	6.21	6.31	6.43	6.41	6.87	5.74	6.30
6	6.08	6.10	6.06	6.08	6.32	6.21	6.20	6.24	6.28	6.04	6.34	5.94	5.87	5.85	5.48	5.98	6.05	5.45	6.05	5.78	6.06	6.21	6.22	M
7	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.87
8	6.35	6.51	6.21	6.22	5.91	6.39	6.11	6.46	6.44	M	M	M	M	M	M	M	M	M	M	M	7.02	6.59	6.93	6.88
9	M	7.32	6.92	6.89	6.84	6.91	6.60	7.05	6.72	6.88	6.93	6.95	5.85	6.60	6.28	7.53	6.89	7.76	M	6.19	6.80	6.89	6.95	7.34
10	7.15	7.11	7.43	7.22	B	6.89	7.12	7.21	7.49	7.25	7.20	7.26	7.27	7.18	6.97	7.15	7.75	7.35	7.60	6.86	6.74	B	B	*-1.
11	6.66	6.99	B	7.28	6.79	6.40	6.61	6.14	6.53	6.39	5.66	6.17	6.51	7.12	6.66	7.11	7.70	7.91	7.83	7.52	7.53	7.71	7.77	7.57
12	6.76	6.37	6.19	6.48	6.63	6.86	6.90	6.77	6.32	6.24	6.35	6.35	6.28	6.53	6.58	6.95	7.06	7.14	6.57	7.05	7.00	7.80	6.87	7.12
13	5.90	6.47	7.04	7.05	7.45	7.20	7.78	6.22	6.90	6.99	7.82	6.38	7.08	6.59	7.27	7.30	6.44	7.67	7.29	7.46	7.77	7.27	6.26	6.65
14	7.36	7.21	7.17	B	7.06	7.18	M	7.22	M	7.46	7.19	M	5.36	7.70	6.58	6.83	6.21	6.96	7.09	7.52	7.12	7.33	7.10	7.12
15	7.07	7.12	7.04	6.95	7.04	7.30	6.79	7.09	6.44	6.29	7.15	7.63	6.85	7.00	6.64	6.64	6.80	7.09	7.08	7.24	6.97	7.00	7.69	7.05
16	B	7.19	B	7.21	6.96	7.29	6.85	B	M	7.39	7.04	M	7.61	7.06	7.39	6.84	7.60	7.15	7.00	B	7.32	7.66	6.93	7.21
17	7.14	7.80	7.50	6.87	7.24	7.37	6.91	7.40	7.17	7.08	7.25	6.97	7.23	7.27	7.40	7.73	7.00	7.39	7.05	7.37	7.16	7.00	7.12	A
18	7.04	7.25	7.03	7.23	6.88	7.38	7.08	6.98	7.49	M	7.02	6.97	6.92	6.90	6.49	5.91	6.30	6.70	7.03	6.90	6.79	6.08	7.57	7.17
19	6.94	M	M	6.61	6.37	6.31	6.79	6.65	M	M	M	M	M	M	M	7.05	6.65	6.68	M	6.95	6.48	M	5.61	M
20	M	4.63	M	5.05	5.43	M	5.59	M	5.81	5.84	M	M	M	M	6.48	M	M	6.81	M	M	6.80	M	6.68	6.59
21	6.60	6.89	M	6.50	6.90	M	6.90	M	6.65	M	M	M	6.59	M	6.87	7.06	M	7.30	7.52	M	6.76	M	6.86	6.24
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
23	M	6.05	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6.21	6.11	5.36	6.02	M	M	5.92
24	M	M	M	M	6.91	M	M	M	M	M	M	6.80	M	7.31	M	6.43	6.34	6.82	M	M	6.97	6.69	*-1.	6.85
25	6.64	6.98	6.64	6.80	6.61	6.37	6.47	7.63	M	6.09	M	6.50	M	6.43	6.63	6.68	6.46	6.58	6.62	6.44	6.24	6.44	M	6.59
26	6.41	6.34	M	M	6.38	6.30	6.69	7.43	M	6.61	6.44	6.55	6.65	6.49	6.31	6.72	7.10	6.61	6.19	6.48	6.76	6.69	6.52	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6.77
28	B	7.33	7.04	6.78	6.93	7.34	7.45	6.84	6.43	6.52	B	M	7.03	7.18	6.00	5.80	6.28	6.39	6.64	6.63	6.90	6.67	6.99	7.65
29	6.57	6.49	6.80	6.42	6.74	6.74	M	6.43	6.71	6.64	6.70	6.47	6.65	6.82	7.60	6.59	6.28	6.52	6.45	6.63	6.56	6.94	6.75	M
30	6.70	7.79	6.73	6.52	6.66	6.98	6.31	6.23	5.76	M	6.49	6.54	6.78	7.45	6.89	6.60	6.83	6.97	6.74	6.69	6.61	6.51	M	M
31	6.33	M	6.26	7.05	6.80	6.99	M	M	6.85	M	M	M	M	M	M	M	M	M	7.71	6.75	6.35	6.41	6.32	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
JULY 1977

Si XII (5.82Å) Hourly Averages (-Log (flux), ergs/cm^2 s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.61	M	5.70	5.60	5.59	5.60	5.68	5.65	5.67	5.63	5.66	5.68	M	5.62	5.66	M	M	M	M	5.32	5.20	5.60	5.63	*-1.
2	5.61	5.68	5.71	5.72	5.68	5.70	5.63	5.68	5.68	5.69	5.65	5.74	5.66	5.70	5.70	M	5.71	5.82	5.73	5.72	5.71	5.65	5.52	*-1.
3	5.67	M	M	5.73	5.77	5.81	5.82	5.80	5.84	5.78	5.77	5.74	5.84	5.83	5.75	5.68	5.73	5.79	5.74	5.72	5.71	5.68	5.69	5.70
4	5.66	5.74	5.71	5.74	5.78	5.79	5.75	5.73	5.81	5.84	5.84	5.86	5.84	5.79	5.84	5.76	5.73	5.72	M	5.87	5.76	5.80	5.67	AC
5	5.78	5.72	5.76	5.76	5.63	5.74	5.70	5.66	5.74	5.89	5.80	5.82	5.75	M	5.80	5.82	5.85	5.79	5.87	5.87	5.87	5.85	5.69	5.83
6	5.78	5.74	5.74	5.72	5.82	5.78	5.80	5.77	5.79	5.76	5.80	5.71	5.63	5.60	5.44	5.67	5.65	5.45	5.68	5.60	5.68	5.67	5.66	M
7	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.75
8	5.90	5.96	5.91	5.90	5.77	5.91	5.86	6.06	5.98	M	M	M	M	M	M	M	M	M	M	M	6.12	6.16	6.16	6.35
9	M	6.23	6.27	6.30	6.20	6.24	6.19	6.28	6.25	6.25	6.25	6.30	5.94	6.12	6.03	6.21	6.30	6.27	M	6.18	6.17	6.27	6.28	6.33
10	6.48	6.33	6.42	6.38	6.48	6.37	6.40	6.48	6.44	6.52	6.48	6.52	6.45	6.51	6.39	6.47	6.49	6.44	6.47	6.33	6.34	6.43	6.45	*-1.
11	6.29	6.37	6.54	6.50	6.34	6.22	6.24	5.97	6.19	6.19	5.68	5.91	6.10	6.38	6.40	6.53	6.69	6.76	6.77	6.75	6.63	6.77	6.77	6.73
12	6.53	6.27	6.06	6.18	6.34	6.49	6.58	6.61	6.27	6.20	6.20	6.21	6.09	6.21	6.28	6.31	6.45	6.49	6.27	6.48	6.44	6.47	6.44	6.46
13	6.50	6.22	6.40	6.47	6.49	6.44	6.49	6.12	6.30	6.36	6.50	6.42	6.41	6.27	6.48	6.47	6.26	6.32	6.44	6.56	6.54	6.55	6.26	6.21
14	6.49	6.57	6.60	6.66	6.53	6.59	M	6.61	6.42	6.63	6.65	M	5.63	6.56	6.53	6.42	6.09	6.62	6.49	6.48	6.46	6.51	6.56	6.46
15	6.45	6.51	6.36	6.46	6.46	6.39	6.41	6.39	6.29	6.12	6.39	6.36	6.29	6.39	6.25	6.31	6.39	6.40	6.47	6.42	6.34	6.37	6.42	6.41
16	6.36	6.41	6.42	6.41	6.26	6.39	6.23	6.41	6.49	6.50	6.34	M	6.46	6.47	6.46	6.36	6.50	6.51	6.44	6.50	6.54	6.48	6.49	6.55
17	6.51	6.48	6.46	6.40	6.41	6.50	6.50	6.52	6.49	6.52	6.43	6.37	6.45	6.45	6.48	6.39	6.48	6.46	6.45	6.46	6.39	6.39	6.41	AF
18	6.40	6.36	6.36	6.35	6.34	6.33	6.29	6.28	6.30	M	6.26	6.23	6.32	6.24	6.14	5.84	5.93	6.09	6.07	6.22	6.23	6.23	6.21	6.23
19	6.20	M	M	6.07	5.76	6.13	6.09	6.03	M	M	M	M	M	M	M	6.09	6.15	6.30	M	6.41	6.15	M	5.66	M
20	M	4.71	M	5.07	5.33	M	5.51	M	5.68	5.77	M	M	M	M	5.95	M	M	6.17	M	M	6.15	M	6.18	6.10
21	6.09	6.16	M	6.00	6.21	M	6.19	M	6.17	M	M	M	6.35	M	6.18	6.18	M	6.28	6.32	6.31	6.28	M	6.32	6.06
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
23	M	5.73	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.41	5.39	5.00	5.23	M	M	5.10
24	M	M	M	M	5.78	M	M	M	M	M	M	5.94	M	6.39	M	6.15	6.08	6.45	M	M	6.44	6.24	*-1.	6.38
25	6.24	6.36	6.41	6.22	6.32	6.29	6.07	6.44	M	6.03	M	6.21	M	6.13	6.44	6.16	6.11	6.15	6.29	6.38	6.00	6.12	M	6.04
26	6.04	5.88	M	M	6.04	6.18	6.06	6.19	M	6.28	6.20	6.17	6.32	6.39	6.47	6.35	6.42	6.20	5.97	6.18	6.35	6.12	6.05	5.75
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6.40
28	6.32	6.40	6.35	6.26	6.29	6.39	6.40	6.40	6.29	6.25	6.53	M	6.65	6.51	6.09	5.86	6.08	6.10	6.14	6.16	6.15	6.23	6.27	6.24
29	6.19	6.29	6.34	6.12	6.34	6.39	M	6.24	6.34	6.25	6.36	6.20	6.38	6.37	6.39	6.37	6.19	6.20	6.31	6.21	6.26	6.44	6.28	M
30	6.37	6.22	6.27	6.14	6.16	6.25	6.41	6.14	5.84	M	6.14	6.29	6.32	6.42	6.27	6.40	6.42	6.39	6.38	6.36	6.38	6.26	M	M
31	6.12	M	6.14	6.46	6.66	6.49	M	M	6.69	M	M	M	M	M	6.56	M	M	M	6.81	6.25	6.17	6.04	5.99	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
AUGUST 1977

Si XV (5.09Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.42	5.75	5.67	5.92	5.86	M	5.67	5.94	6.20	6.08	5.99	5.83	6.05	6.10	5.87	5.69	5.73	5.78	5.77	6.03	5.84	5.92	5.92	M
2	5.95	5.71	6.03	5.90	5.89	5.73	6.08	6.20	6.23	5.94	5.92	5.97	5.97	6.10	6.08	6.04	6.11	6.17	6.28	6.30	6.12	6.27	6.27	6.45
3	6.41	6.42	6.47	6.35	6.22	6.19	6.30	6.29	6.16	6.02	6.10	M	6.32	6.38	6.09	6.33	6.15	6.27	6.34	5.87	6.07	5.85	6.03	5.84
4	5.86	5.94	5.92	5.72	6.21	6.05	6.09	6.03	5.92	5.94	5.90	5.59	5.64	5.38	5.45	4.95	5.19	5.53	5.01	4.97	5.37	5.23	4.76	5.53
5	M	5.76	5.41	5.49	5.71	5.72	5.63	5.43	5.53	5.09	5.13	5.05	4.94	4.76	4.78	4.67	5.12	5.42	5.35	5.23	5.42	5.47	5.49	5.37
6	M	5.48	5.47	5.58	5.40	5.57	5.49	5.69	5.69	5.57	4.75	4.51	4.79	5.44	5.61	5.59	5.57	5.32	5.43	5.31	5.43	4.87	4.67	4.91
7	5.55	5.52	5.56	5.24	5.39	5.58	5.55	5.36	5.41	5.28	5.45	5.68	5.81	4.27	4.81	5.80	5.76	5.56	5.82	5.87	5.93	5.94	5.96	5.87
8	5.87	6.02	5.95	5.77	6.11	6.01	5.94	5.95	5.93	6.00	5.97	5.98	6.10	5.98	5.97	5.97	5.93	6.00	6.11	6.06	5.92	5.50	5.62	5.93
9	5.81	5.52	6.01	6.04	5.98	5.64	5.76	5.92	5.73	5.64	6.00	5.74	5.97	6.04	6.07	5.83	5.90	5.18	6.06	6.09	6.10	6.06	6.00	5.35
10	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
11	6.00	5.91	5.76	6.11	6.03	5.96	6.03	5.95	5.61	5.75	5.85	6.09	5.74	5.91	6.14	6.26	6.27	6.22	6.17	6.28	6.25	6.20	6.16	*-1.
12	6.05	5.86	6.06	6.08	6.05	6.14	6.24	6.20	5.99	6.06	6.33	6.33	6.30	6.18	6.34	6.28	6.19	5.80	6.10	6.23	6.11	6.26	6.31	M
13	6.28	6.11	6.17	6.06	5.81	5.82	5.42	5.41	5.39	5.45	5.49	5.68	5.75	5.75	5.87	5.90	6.00	6.06	5.95	6.10	6.26	6.29	6.12	M
14	6.18	6.12	6.02	5.36	5.88	6.11	M	M	6.38	6.41	6.13	5.94	6.20	6.34	6.24	M	6.19	6.32	6.07	6.20	6.04	6.32	6.06	6.22
15	5.77	5.96	6.07	6.19	6.22	6.30	5.83	5.99	6.28	6.29	6.34	6.34	6.30	5.83	6.11	6.10	6.07	6.34	6.19	6.36	6.41	6.31	6.41	6.28
16	M	5.79	6.09	6.28	M	M	6.20	6.25	6.32	6.29	6.37	6.35	5.92	6.24	5.40	6.02	5.95	6.20	M	6.30	6.32	6.34	6.28	6.23
17	6.11	6.06	6.28	6.29	M	M	6.16	5.97	6.06	6.45	6.46	6.10	5.37	5.85	6.31	6.20	6.15	6.28	5.54	6.04	6.14	5.81	5.43	6.25
18	6.30	6.34	5.83	5.40	M	M	6.22	6.31	6.18	5.94	M	M	M	M	M	M	M	M	M	M	M	M	M	M
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
20	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
AUGUST 1977

Si XIII (5.68A) Hourly Averages (-Log (flux), ergs/cm^{2}s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	6.00	6.14	6.14	6.43	6.17	M	6.04	6.25	6.52	6.54	6.44	6.11	6.51	6.24	6.12	5.96	6.03	6.11	6.30	6.54	6.21	6.28	6.29	M
2	6.29	6.06	6.66	6.27	6.34	6.01	6.42	7.00	6.69	6.41	6.27	6.44	6.34	6.64	6.45	6.44	6.48	6.69	6.64	6.94	6.43	6.62	6.70	6.76
3	6.83	7.03	7.33	6.72	6.63	6.61	6.72	6.73	6.45	6.43	6.59	M	6.77	6.64	6.46	6.77	6.53	6.71	6.89	6.24	6.89	6.26	6.49	6.13
4	6.23	6.27	6.22	6.00	6.59	6.43	6.52	6.45	6.30	6.28	6.15	5.96	6.02	5.84	5.86	5.41	5.62	5.98	5.41	5.38	5.80	5.65	5.22	5.98
5	M	6.15	5.81	5.85	6.09	6.04	5.93	5.75	5.86	5.43	5.49	5.45	5.39	5.18	5.18	5.13	5.58	5.81	5.68	5.62	5.75	5.84	5.91	5.74
6	M	5.85	5.89	5.90	5.75	5.91	5.86	6.05	6.34	5.83	5.06	4.81	5.10	5.80	5.97	5.97	5.92	5.61	5.77	5.59	5.76	5.11	4.97	5.18
7	5.92	5.83	5.84	5.47	5.76	5.89	5.89	5.64	5.67	5.59	5.76	5.97	6.16	4.58	5.09	6.09	6.04	5.93	6.08	6.26	6.19	6.21	6.24	6.16
8	6.21	6.26	6.28	6.09	6.37	6.28	6.19	6.16	6.18	6.27	6.24	6.17	6.34	6.30	6.27	6.20	6.22	6.30	6.48	6.40	6.21	5.75	5.91	6.23
9	6.09	5.81	6.35	6.45	6.25	5.90	6.02	6.20	6.02	5.89	6.30	6.01	6.27	6.33	6.35	6.18	6.20	5.49	6.45	6.45	6.57	6.34	6.38	5.56
10	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
11	6.46	6.29	6.20	6.48	6.43	6.36	6.39	6.36	6.04	6.38	6.43	6.43	6.18	6.28	6.49	6.66	7.15	6.39	6.55	6.86	6.54	6.64	6.46	*-1.
12	6.44	6.33	6.44	6.40	6.37	6.88	6.93	6.51	6.28	6.37	6.92	6.69	6.71	7.81	6.76	6.59	6.59	6.05	6.55	6.80	6.50	6.71	6.74	M
13	6.80	6.51	6.57	6.46	6.27	6.24	5.86	5.87	5.85	5.95	5.96	6.18	6.18	6.27	6.56	6.36	6.50	6.51	6.44	6.54	6.56	6.62	6.52	M
14	6.64	6.50	6.39	5.77	6.32	6.48	M	M	7.03	7.09	6.52	6.40	6.69	6.81	6.80	M	6.91	6.72	6.56	6.72	6.89	6.88	6.44	6.54
15	6.64	6.30	6.60	6.75	6.54	6.91	6.16	6.68	6.65	6.56	7.15	6.83	6.62	6.07	6.91	6.26	7.52	6.82	6.59	7.78	6.45	6.65	6.84	6.60
16	M	6.16	6.54	6.57	M	M	6.57	6.77	6.69	6.72	7.27	7.19	6.86	6.55	6.15	6.52	6.28	6.65	M	6.84	6.57	6.67	6.77	6.58
17	6.68	6.63	6.69	6.63	M	M	6.64	6.36	6.64	7.01	7.12	6.50	5.76	6.34	B	6.94	6.56	6.69	5.85	6.39	6.51	6.23	5.79	6.68
18	6.85	6.90	6.48	5.81	M	M	6.68	6.76	6.51	6.42	M	M	M	M	M	M	M	M	M	M	M	M	M	M
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
20	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
AUGUST 1977

Si XII (5.82Å) Hourly Averages (-Log (flux), ergs/cm^2 s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.80	5.97	5.99	6.04	6.06	M	5.90	6.01	6.25	6.09	6.12	5.95	6.00	6.10	5.82	5.89	5.88	5.92	5.87	5.97	5.94	5.92	5.95	M
2	5.97	5.88	6.00	5.93	5.88	5.84	5.97	6.02	6.09	6.03	5.94	6.00	5.96	6.02	6.00	6.03	6.03	6.03	6.05	6.10	6.01	6.03	6.19	6.24
3	6.18	6.17	6.24	6.12	6.06	6.04	6.08	6.11	6.07	5.94	6.01	M	6.12	6.16	6.04	6.15	6.09	6.13	6.18	6.03	6.07	5.95	6.06	5.95
4	5.97	5.97	5.95	5.90	6.08	6.07	6.01	5.99	5.94	5.92	5.89	5.77	5.82	5.69	5.69	5.41	5.57	5.76	5.55	5.39	5.67	5.61	5.14	5.73
5	M	5.83	5.70	5.65	5.78	5.78	5.78	5.61	5.63	5.41	5.44	5.36	5.33	5.19	5.16	5.06	5.31	5.59	5.57	5.58	5.55	5.65	5.70	5.63
6	M	5.74	5.73	5.73	5.60	5.70	5.72	5.79	5.77	5.67	5.16	5.07	5.04	5.54	5.67	5.69	5.67	5.52	5.56	5.53	5.56	5.23	5.13	5.21
7	5.61	5.65	5.68	5.52	5.55	5.65	5.64	5.50	5.51	5.49	5.54	5.70	5.82	4.84	5.16	5.82	5.80	5.72	5.84	5.94	5.91	5.90	5.95	5.90
8	5.91	5.97	5.94	5.90	5.99	5.98	5.93	5.93	5.94	5.95	5.94	5.92	5.97	5.92	5.93	5.89	5.89	5.90	5.97	5.93	5.89	5.69	5.74	5.94
9	5.86	5.73	5.92	5.98	5.94	5.76	5.82	5.87	5.90	5.81	5.99	5.87	5.91	5.98	6.01	5.88	5.88	5.61	6.00	6.09	6.01	5.97	6.00	5.72
10	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
11	5.91	5.89	5.79	6.00	5.94	5.93	5.95	5.91	5.80	5.84	5.86	5.96	5.88	5.88	6.01	6.06	6.10	6.02	6.04	6.08	6.09	6.03	5.95	*-1.
12	5.98	5.92	6.00	6.00	5.99	6.03	6.09	6.08	5.99	6.02	6.11	6.12	6.08	6.06	6.10	6.11	6.03	6.02	6.00	6.06	6.01	6.05	6.11	M
13	6.10	6.03	6.04	6.04	5.92	5.91	5.68	5.68	5.63	5.63	5.66	5.75	5.74	5.77	5.83	5.85	5.88	5.92	5.90	5.97	6.05	6.06	6.01	M
14	6.02	6.01	6.00	5.68	5.87	6.04	M	M	6.12	6.15	6.06	5.97	6.05	6.08	6.05	M	6.01	6.06	6.07	6.04	6.03	6.08	6.03	6.03
15	5.71	5.95	6.00	6.05	6.01	6.03	5.88	5.88	6.08	6.07	6.09	6.11	6.10	5.94	5.99	5.92	5.93	6.06	6.00	6.06	6.02	6.11	6.05	6.12
16	M	5.89	5.96	6.03	M	M	6.01	6.02	6.07	6.06	6.08	6.10	5.97	6.07	5.63	5.89	5.87	6.00	M	6.02	6.02	6.09	6.05	6.06
17	5.98	5.97	6.05	6.05	M	M	6.06	6.02	6.01	6.21	6.17	6.06	5.71	5.89	6.12	6.15	6.09	6.12	5.77	5.97	6.08	6.01	5.74	6.09
18	6.10	6.13	5.95	5.68	M	M	6.10	6.13	6.08	6.01	M	M	M	M	M	M	M	M	M	M	M	M	M	M
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
20	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
SEPTEMBER 1977

Si XV (5.09Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
2	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
4	M	M	M	M	M	M	M	M	M	M	M	5.83	5.96	5.81	5.73	5.75	5.58	5.11	5.69	5.94	6.04	5.75	5.92	M
5	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
6	5.70	5.60	5.38	5.28	5.35	5.35	5.36	M	M	5.27	5.68	5.70	5.81	5.81	5.97	5.92	5.90	5.72	5.91	5.67	5.14	4.82	4.80	4.87
7	4.87	4.89	4.44	M	M	4.40	4.46	4.69	M	4.87	5.00	4.97	4.91	4.84	4.85	4.76	M	M	M	4.24	4.38	4.61	4.62	M
8	M	M	M	4.08	4.11	4.28	4.29	4.30	4.34	4.40	4.53	M	4.53	4.68	4.63	4.71	4.74	4.72	4.88	4.99	5.00	4.92	4.90	5.03
9	4.95	4.90	4.74	5.05	4.94	4.29	4.43	4.85	5.01	5.06	4.93	M	5.03	5.13	5.05	5.02	4.75	M	M	4.12	4.17	4.33	4.30	4.39
10	M	4.50	4.59	4.80	4.82	4.59	M	4.55	4.58	4.65	4.82	M	M	M	M	M	5.04	5.14	5.17	5.33	5.34	5.32	M	5.32
11	5.37	5.45	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
12	M	5.19	5.31	5.42	5.28	5.28	5.17	5.32	5.40	M	5.35	5.23	5.34	5.34	5.27	5.44	5.43	5.45	5.44	5.39	5.47	5.50	5.48	5.38
13	5.37	5.31	5.32	5.33	5.37	5.39	5.32	5.34	5.32	5.02	5.15	5.01	5.10	5.06	5.17	5.26	5.38	5.26	5.24	5.23	5.15	5.22	5.35	5.36
14	5.33	5.33	5.24	5.26	4.82	4.77	5.09	5.17	5.28	5.31	5.36	5.32	5.18	4.91	5.14	4.85	4.30	4.88	5.02	5.04	5.15	5.02	5.09	5.21
15	5.27	5.02	4.92	5.08	4.93	4.95	5.04	5.15	5.03	5.00	4.96	4.72	4.70	4.74	5.20	5.28	5.31	5.27	5.19	5.11	5.20	5.15	5.14	5.22
16	5.40	5.05	5.29	5.31	M	5.22	5.28	5.23	5.25	5.14	4.94	5.11	5.25	5.24	5.15	5.18	5.15	5.04	4.50	4.83	5.28	5.16	M	M
17	M	M	4.81	4.10	4.36	4.42	4.60	4.74	4.75	4.86	M	4.93	4.76	4.84	4.89	4.74	4.92	4.87	4.86	4.81	4.57	4.72	4.60	4.39
18	4.59	M	3.94	3.94	4.10	4.26	4.34	4.22	4.42	4.64	4.79	4.78	4.63	4.86	4.87	4.98	5.01	5.02	4.70	4.91	4.82	5.04	4.86	A
19	4.31	4.21	5.03	5.08	4.76	4.84	4.76	4.71	4.71	4.53	M	M	M	M	M	3.85	3.94	3.99	4.08	4.20	4.20	4.34	4.40	4.43
20	M	M	4.55	4.61	M	M	M	M	3.87	3.90	4.00	4.05	4.09	4.16	4.20	4.24	4.31	4.30	4.35	4.39	4.38	4.20	4.43	4.46
21	4.44	4.54	4.59	4.51	4.60	4.76	4.73	4.64	4.72	4.90	4.87	4.71	4.69	4.69	4.88	5.00	4.20	4.44	4.91	5.00	5.00	4.94	4.97	4.95
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	4.85
23	4.61	4.94	4.93	5.16	4.89	5.03	5.06	4.91	4.77	4.86	5.02	4.99	5.15	4.74	4.93	5.11	5.18	5.21	5.25	5.11	5.14	5.13	*-1.	5.00
24	4.73	5.28	5.21	5.32	5.41	5.29	5.05	4.84	4.72	4.83	4.59	M	3.92	3.98	4.11	4.21	4.38	4.51	4.62	4.80	4.69	4.87	*-1.	5.00
25	5.03	5.05	4.94	5.17	4.54	4.48	4.44	4.68	5.04	4.96	4.15	4.76	5.07	5.02	4.18	4.72	5.01	4.82	5:00	4.88	4.86	4.92	5.33	5.28
26	5.22	4.88	4.47	4.89	4.97	5.19	4.61	5.22	5.21	4.79	5.25	5.46	5.01	4.87	5.31	5.12	5.35	5.43	5.33	4.90	5.00	5.21	5.05	5.23
27	5.38	5.24	5.11	5.28	5.61	5.35	5.30	5.41	5.36	5.14	5.24	5.41	5.57	5.33	5.16	5.37	4.96	5.22	5.28	5.14	5.41	5.35	5.51	5.54
28	5.38	5.39	5.45	5.34	5.58	5.37	5.17	5.47	5.38	5.44	5.55	5.47	5.57	5.57	5.53	5.32	5.55	5.53	5.31	5.58	5.72	5.72	5.58	5.66
29	5.61	5.42	5.60	5.58	5.45	5.44	5.27	M	M	5.00	5.12	5.32	5.53	5.54	5.49	5.71	5.68	5.56	5.51	5.56	5.51	5.60	5.66	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

<u>Note</u>: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
SEPTEMBER 1977

Si XIII (5.68A) Hourly Averages (-Log (flux), ergs/cm^{2}s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
2	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
4	M	M	M	M	M	M	M	M	M	M	M	6.23	6.40	6.14	5.96	6.19	5.91	5.36	6.08	6.25	6.48	6.05	6.19	M
5	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
6	6.01	5.86	5.68	5.59	5.68	5.63	5.69	M	M	5.56	6.06	6.03	6.14	6.08	6.32	6.27	6.20	6.13	6.30	6.11	5.57	5.26	5.24	5.33
7	5.35	5.38	4.86	M	M	4.92	4.96	5.15	M	5.31	5.48	5.40	5.43	5.33	5.34	5.35	M	M	M	4.72	4.86	5.11	5.15	M
8	M	M	M	4.51	4.52	4.69	4.71	4.73	4.79	4.82	4.95	M	4.97	5.11	5.13	5.15	5.20	5.21	5.34	5.40	5.43	5.39	5.37	5.53
9	5.43	5.39	5.23	5.57	5.47	4.79	4.90	5.32	5.55	5.58	5.47	M	5.55	5.59	5.40	5.51	5.21	M	M	4.49	4.53	4.67	4.68	4.78
10	M	4.92	5.02	5.19	5.20	5.04	M	5.09	5.15	5.21	5.30	M	M	M	M	M	5.59	5.63	5.63	5.74	5.73	5.81	M	5.74
11	5.78	5.85	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
12	M	5.62	5.69	5.86	5.68	5.69	5.54	5.73	5.80	M	5.75	5.58	5.73	5.69	5.61	5.81	5.79	5.79	5.78	5.71	5.81	5.82	5.82	5.79
13	5.78	5.71	5.79	5.66	5.78	5.73	5.67	5.63	5.63	5.27	5.45	5.35	5.45	5.39	5.53	5.63	5.77	5.59	5.55	5.52	5.55	5.59	5.84	5.61
14	5.71	5.66	5.55	5.73	5.23	5.15	5.51	5.67	5.65	5.69	5.73	5.69	5.59	5.29	5.50	5.18	4.70	5.25	5.38	5.43	5.53	5.38	5.51	5.62
15	5.65	5.38	5.29	5.39	5.23	5.31	5.39	5.55	5.34	5.33	5.29	5.02	5.03	5.08	5.59	5.70	5.72	5.68	5.55	5.47	5.56	5.49	5.52	5.59
16	5.75	5.52	5.69	5.70	M	5.75	5.62	5.60	5.59	5.53	5.29	5.48	5.61	5.61	5.52	5.56	5.50	5.37	4.82	5.15	5.63	5.44	M	M
17	M	M	4.46	4.55	4.77	4.83	5.00	5.15	5.13	5.24	M	5.33	5.06	5.19	5.27	5.12	5.30	5.20	5.25	5.17	4.89	5.09	4.96	4.71
18	4.94	M	4.41	4.37	4.47	4.61	4.68	4.56	4.81	4.98	5.10	5.09	4.95	5.20	5.22	5.32	5.36	5.36	5.02	5.21	5.17	5.43	5.22	A
19	4.63	4.60	5.45	5.49	5.12	5.23	5.12	5.09	5.08	4.90	M	M	M	M	M	4.26	4.39	4.41	4.47	4.60	4.53	4.68	4.80	4.75
20	M	M	4.87	4.96	M	M	M	M	4.26	4.29	4.39	4.46	4.47	4.54	4.58	4.60	4.67	4.68	4.72	4.74	4.74	4.61	4.82	4.84
21	4.81	4.90	4.97	4.86	4.97	5.12	5.07	5.01	5.05	5.25	5.23	5.02	5.00	5.01	5.20	5.35	4.56	4.75	5.24	5.33	5.35	5.32	5.33	5.33
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.18
23	5.01	5.28	5.31	5.50	5.26	5.40	5.38	5.30	5.26	5.37	5.44	5.37	5.56	5.08	5.30	5.47	5.54	5.61	5.64	5.46	5.49	5.48	*-1.	5.34
24	5.10	5.69	5.63	5.76	5.85	5.69	5.44	5.23	5.14	5.25	5.02	M	4.40	4.37	4.47	4.53	4.71	4.84	4.95	5.14	5.04	5.20	*-1.	5.37
25	5.38	5.46	5.34	5.57	5.00	4.91	4.92	5.08	5.47	5.37	4.51	5.17	5.42	5.40	4.79	5.24	5.42	5.19	5.40	5.25	5.29	5.40	5.78	5.72
26	5.64	5.36	4.92	5.37	5.34	5.56	5.02	5.65	5.62	5.17	5.74	5.88	5.40	5.25	5.68	5.49	5.78	5.80	5.73	5.28	5.36	5.64	5.45	5.65
27	5.84	5.64	5.57	5.68	6.02	5.78	5.72	5.85	5.79	5.65	5.69	5.88	6.06	5.74	5.57	5.80	5.35	5.63	5.72	5.57	5.80	5.85	6.02	5.93
28	5.75	5.82	5.87	5.84	6.18	5.81	5.63	6.01	5.87	5.95	6.04	5.92	6.21	5.97	6.02	5.79	5.98	5.99	5.69	6.06	6.14	6.18	6.09	6.17
29	6.13	5.90	6.02	6.11	5.97	5.97	5.69	M	M	5.41	5.53	5.76	6.03	6.05	5.97	6.47	6.16	6.02	5.92	5.98	6.02	6.13	6.07	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES
SEPTEMBER 1977

Si XII (5.82Å) Hourly Averages (-Log (flux), ergs/cm^2 s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
2	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
4	M	M	M	M	M	M	M	M	M	M	M	5.79	5.80	5.76	5.70	5.77	5.73	5.45	5.68	5.76	5.87	5.75	5.83	M
5	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
6	5.75	5.75	5.66	5.62	5.64	5.59	5.60	M	M	5.48	5.71	5.68	5.74	5.72	5.84	5.80	5.80	5.79	5.82	5.78	5.54	5.31	5.25	5.25
7	5.24	5.25	4.98	M	M	4.91	4.95	5.12	M	5.21	5.31	5.31	5.25	5.20	5.22	5.21	M	M	M	4.76	4.89	5.06	5.07	M
8	M	M	M	4.61	4.64	4.77	4.79	4.79	4.84	4.86	4.95	M	4.96	5.10	5.08	5.09	5.15	5.12	5.22	5.29	5.31	5.27	5.26	5.32
9	5.27	5.27	5.18	5.33	5.28	4.83	4.93	5.22	5.31	5.36	5.24	M	5.26	5.35	5.29	5.28	5.12	M	M	4.55	4.63	4.79	4.77	4.83
10	M	4.95	5.00	5.12	5.15	5.06	M	4.97	5.00	5.09	5.16	M	M	M	M	M	5.31	5.36	5.38	5.45	5.44	5.47	M	5.49
11	5.47	5.48	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
12	M	5.39	5.43	5.45	5.37	5.42	5.35	5.41	5.46	M	5.45	5.35	5.35	5.42	5.38	5.46	5.46	5.47	5.47	5.47	5.49	5.49	5.49	5.44
13	5.50	5.42	5.39	5.41	5.46	5.45	5.39	5.38	5.40	5.24	5.29	5.20	5.22	5.21	5.27	5.34	5.37	5.37	5.36	5.34	5.30	5.33	5.38	5.39
14	5.42	5.37	5.36	5.36	5.14	5.12	5.27	5.31	5.34	5.38	5.39	5.41	5.34	5.19	5.28	5.17	4.83	5.07	5.19	5.24	5.33	5.30	5.29	5.33
15	5.33	5.24	5.18	5.24	5.12	5.15	5.21	5.28	5.22	5.22	5.19	5.08	5.09	5.05	5.28	5.35	5.36	5.35	5.32	5.28	5.33	5.27	5.31	5.31
16	5.44	5.28	5.39	5.35	M	5.31	5.33	5.29	5.31	5.24	5.19	5.24	5.31	5.30	5.26	5.27	5.26	5.23	4.87	5.06	5.30	5.30	M	M
17	M	M	4.48	4.61	4.82	4.88	4.99	5.07	5.07	5.14	M	5.15	5.04	5.08	5.14	5.05	5.13	5.11	5.06	5.06	4.87	5.00	4.96	4.78
18	4.95	M	4.38	4.39	4.56	4.69	4.77	4.67	4.78	4.93	5.06	5.06	4.92	5.08	5.11	5.16	5.20	5.17	5.08	5.09	5.09	5.20	5.10	A
19	4.85	4.68	5.14	5.20	5.04	5.05	5.03	4.98	4.99	4.86	M	M	M	M	M	4.27	4.46	4.50	4.60	4.71	4.66	4.78	4.88	4.82
20	M	M	4.89	4.92	M	M	M	M	4.29	4.33	4.49	4.56	4.60	4.65	4.69	4.73	4.77	4.77	4.79	4.80	4.80	4.68	4.82	4.87
21	4.85	4.91	4.94	4.93	4.94	5.01	5.02	4.94	5.02	5.07	5.07	4.99	4.99	4.96	5.08	5.16	4.67	4.81	5.09	5.14	5.14	5.10	5.11	5.10
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	5.07
23	5.00	5.13	5.13	5.22	5.18	5.21	5.23	5.20	5.09	5.16	5.20	5.15	5.25	5.13	5.16	5.24	5.29	5.33	5.36	5.29	5.30	5.29	*-1.	5.22
24	5.07	5.33	5.35	5.38	5.43	5.40	5.38	5.27	5.12	5.18	5.16	M	4.35	4.49	4.63	4.72	4.83	4.91	5.01	5.14	5.14	5.18	*-1.	5.29
25	5.30	5.37	5.31	5.39	5.05	4.94	4.94	5.07	5.33	5.32	4.65	5.06	5.28	5.30	4.60	5.10	5.32	5.29	5.26	5.25	5.13	5.21	5.42	5.43
26	5.40	5.20	4.98	5.19	5.29	5.37	5.01	5.34	5.44	5.11	5.41	5.53	5.35	5.16	5.42	5.38	5.46	5.48	5.48	5.29	5.31	5.40	5.32	5.41
27	5.49	5.42	5.35	5.41	5.57	5.52	5.47	5.53	5.50	5.42	5.44	5.53	5.61	5.52	5.42	5.49	5.30	5.42	5.44	5.42	5.48	5.48	5.59	5.59
28	5.53	5.55	5.54	5.55	5.65	5.55	5.45	5.59	5.60	5.64	5.65	5.63	5.67	5.69	5.72	5.57	5.64	5.66	5.53	5.74	5.76	5.77	5.70	5.73
29	5.73	5.66	5.73	5.71	5.65	5.63	5.55	M	M	5.36	5.39	5.54	5.67	5.66	5.63	5.77	5.71	5.68	5.63	5.72	5.64	5.72	5.74	M
30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.
Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

Data are missing for days 7, 22 and 27 July, 10 August, and 22 and 30 September 1977 due to a delay in data tape deliveries. Corrected versions of these tables will be published later.

UAG Series of Reports

Prepared by World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado, U.S.A.

These reports are for sale through the National Climatic Center, Federal Building, Asheville, NC 28801, Attn: Publications. Subscription price: $25.20 a year; $12.00 additional for foreign mailing; single copy price varies. These reports are issued on an irregular basis with 6 to 12 reports being issued each year. Therefore, in some years the single copy rate will be less than the subscription price, and in some years the single copy rate will be more than the subscription price. Make check or money order payable to: Department of Commerce, NOAA.

Some issues are now out of print and are available only on microfiche as indicated. Requests for microfiche should be sent to World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO 80302, with check or money order made payable to Department of Commerce, NOAA.

UAG-1 "IQSY Night Airglow Data", price $1.75.
UAG-2 "A Reevaluation of Solar Flares, 1964-1966", price 30 cents.
UAG-3 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz, 6 July 1966 through 8 September 1968", microfiche only, price 45 cents.
UAG-4 "Abbreviated Calendar Record 1966-1967", price $1.25.
UAG-5 "Data on Solar Event of May 23, 1967 and its Geophysical Effects", price 65 cents.

UAG-6 "International Geophysical Calendars 1957-1969", price 30 cents.
UAG-7 "Observations of the Solar Electron Corona: February 1964-January 1968", price 15 cents.
UAG-8 "Data on Solar-Geophysical Activity October 24-November 6, 1968", price (includes Parts 1 & 2) $1.75.
UAG-9 "Data on Cosmic Ray Event of November 18, 1968 and Associated Phenomena", price 55 cents.
UAG-10 "Atlas of Ionograms", price $1.50.

UAG-11 "Catalogue of Data on Solar-Terrestrial Physics" (now obsolete).
UAG-12 "Solar-Geophysical Activity Associated with the Major Geomagnetic Storm of March 8, 1970", price (includes Parts 1-3) $3.00.
UAG-13 "Data on the Solar Proton Event of November 2, 1969 through the Geomagnetic Storm of November 8-10, 1969, price 50 cents.
UAG-14 "An Experimental, Comprehensive Flare Index and Its Derivation for 'Major' Flares, 1955-1969", price 30 cents.
UAG-15 "Catalogue of Data on Solar-Terrestrial Physics" (now obsolete).

UAG-16 "Temporal Development of the Geographical Distribution of Auroral Absorption for 30 Substorm Events in each of IQSY (1964-65) and IASY (1969)", price 70 cents.
UAG-17 "Ionospheric Drift Velocity Measurements at Jicamarca, Peru (July 1967-March 1970)", microfiche only, price 45 cents.
UAG-18 "A Study of Polar Cap and Auroral Zone Magnetic Variations", price 20 cents.
UAG-19 "Reevaluation of Solar Flares 1967", price 15 cents.
UAG-20 "Catalogue of Data on Solar-Terrestrial Physics" (now obsolete).

UAG-21 "Preliminary Compilation of Data for Retrospective World Interval July 26 - August 14, 1972", price 70 cents.
UAG-22 "Auroral Electrojet Magnetic Activity Indices (AE) for 1970", price 75 cents.
UAG-23 "U.R.S.I. Handbook of Ionogram Interpretation and Reduction", price $1.75.
UAG-24 "Data on Solar-Geophysical Activity Associated with the Major Ground Level Cosmic Ray Events of 24 January and 1 September 1971", price (includes Parts 1 and 2) $2.00.
UAG-25 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz, 9 September 1968 through 9 December 1971", price 35 cents.

UAG-26 "Data Compilation for the Magnetospherically Quiet Periods February 19-23 and November 29 - December 3, 1970", price 70 cents.
UAG-27 "High Speed Streams in the Solar Wind", price 15 cents.
UAG-28 "Collected Data Reports on August 1972 Solar-Terrestrial Events", price (includes Parts 1-3) $4.50.
UAG-29 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1968", price 75 cents.
UAG-30 "Catalogue of Data on Solar-Terrestrial Physics", price $1.75.

UAG-31 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1969", price 75 cents.
UAG-32 "Synoptic Radio Maps of the Sun at 3.3 mm for the Years 1967-1969", price 35 cents.
UAG-33 "Auroral Electrojet Magnetic Activity Indices AE (10) for 1967", price 75 cents.
UAG-34 "Absorption Data for the IGY/IGC and IQSY", price $2.00.
UAG-35 "Catalogue of Digital Geomagnetic Variation Data at World Data Center A for Solar-Terrestrial Physics", price 20 cents.

UAG-36 "An Atlas of Extreme Ultraviolet Flashes of Solar Flares Observed Via Sudden Frequency Deviations During the ATM-SKYLAB Missions", price 55 cents.
UAG-37 "Auroral Electrojet Magnetic Activity Indices AE (10) for 1966", price 75 cents.
UAG-38 "Master Station List for Solar-Terrestrial Physics Data at WDC-A for Solar-Terrestrial Physics", price $1.60.
UAG-39 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1971", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, February 1975, 144 pages, price $2.05.

UAG-40 "H-Alpha Synoptic Charts of Solar Activity For the Period of Skylab Observations, May, 1973-March, 1974", by Patrick S. McIntosh, NOAA Environmental Research Laboratories, February 1975, 32 pages, price 56 cents.

UAG-41 "H-Alpha Synoptic Charts of Solar Activity During the First Year of Solar Cycle 20, October, 1964 - August, 1965", by Patrick S. McIntosh, NOAA Environmental Research Laboratories, and Jerome T. Nolte, American Science and Engineering, Cambridge, Massachusetts, March 1975, 25 pages, price 48 cents.

UAG-42 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-80 MHz 10 December 1971 through 21 March 1975", by James W. Warwick, George A. Dulk, and Anthony C. Riddle, Department of Astro-Geophysics, University of Colorado, Boulder, Colorado 80302, April 1975, 49 pages, price $1.15.

UAG-43 "Catalog of Observation Times of Ground-Based Skylab-Coordinated Solar Observing Programs", compiled by Helen E. Coffey, World Data Center A for Solar-Terrestrial Physics, May 1975, 159 pages, price $3.00.

UAG-44 "Synoptic Maps of Solar 9.1 cm Microwave Emission from June 1962 to August 1973", by Werner Graf and Ronald N. Bracewell, Radio Astronomy Institute, Stanford University, Stanford, California 94305, May 1975, 183 pages, price $2.55.

UAG-45 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1972", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, May 1975, 144 pages, price $2.10.

UAG-46 "Interplanetary Magnetic Field Data 1963-1974", by Joseph H. King, National Space Science Data Center, NASA Goddard Space Flight Center, Greenbelt, Maryland 20771, June 1975, 382 pages, price $2.95.

UAG-47 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1973", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, June 1975, 144 pages, price $2.10.

UAG-48A "Synoptic Observations of the Solar Corona during Carrington Rotations 1580-1596 (11 October 1971 - 15 January 1973)", [Reissue with quality images] by R. A. Howard, M. J. Koomen, D. J. Michels, R. Tousey, C. R. Detwiler, D. E. Roberts, R. T. Seal and J. D. Whitney, E. O. Hulbert Center for Space Research, NRL, Washington, D. C. 20375 and R. T. and S. F. Hansen, C. J. Garcia and E. Yasukawa, High Altitude Observatory, NCAR, Boulder, Colorado 80303, February 1976, 200 pages, price $4.27.

UAG-49 "Catalog of Standard Geomagnetic Variation Data", prepared by Environmental Data Service, NOAA, Boulder, Colorado, August 1975, 125 pages, price $1.85.

UAG-50 "High-Latitude Supplement to the URSI Handbook on Ionogram Interpretation and Reduction", by W. R. Piggott, British Antarctic Survey, c/o SRC, Appleton Laboratory, Ditton Park, Slough, England, October 1975, 292 pages, price $4.00.

UAG-51 "Synoptic Maps of Solar Coronal Hole Boundaries Derived from He II 304Å Spectroheliograms from the Manned Skylab Missions", by J. D. Bohlin and D. M. Rubenstein, E. O. Hulbert Center for Space Research, Naval Research Laboratory, Washington, D. C. 20375 U.S.A., November 1975, 30 pages, price 54 cents.

UAG-52 "Experimental Comprehensive Solar Flare Indices for Certain Flares, 1970-1974", compiled by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, The University of Michigan, 895 Lake Angelus Road North, Pontiac, Michigan 48055 U.S.A., November 1975, 27 pages, price 60 cents.

UAG-53 "Description and Catalog of Ionospheric F-Region Data, Jicamarca Radar Observatory (November 1966 - April 1969)", by W. L. Clark and T. E. Van Zandt, Aeronomy Laboratory, NOAA, Boulder, Colorado 80302 and J. P. McClure, University of Texas at Dallas, Dallas, Texas 75230, April 1976, 10 pages, price 33 cents.

UAG-54 "Catalog of Ionosphere Vertical Soundings Data", prepared by Environmental Data Service, NOAA, Boulder, Colorado 80302, April 1976, 130 pages, price $2.10.

UAG-55 "Equivalent Ionospheric Current Representations by a New Method, Illustrated for 8-9 November 1969 Magnetic Disturbances", by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80302 and Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701, H. W. Kroehl, Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302, M. Kanamitsu, Advanced Study Program, National Center for Atmospheric Research, Boulder, Colorado 80303, J. H. Allen, Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302, and S.-I. Akasofu, Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701, April 1976, 91 pages, price $1.60.

UAG-56 "Iso-intensity Contours of Ground Magnetic H Perturbations for the December 16-18, 1971 Geomagnetic Storm", by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80302 and Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701 (currently Guest worker at Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302), April 1976, 37 pages, price $1.39.

UAG-57 "Manual on Ionospheric Absorption Measurements", edited by K. Rawer, Institut für Physikalische Weltraumforschung, Freiburg, G.F.R., June 1976, 202 pages, price $4.27.

UAG-58 "ATS6 Radio Beacon Electron Content Measurements at Boulder, July 1974 - May 1975", by R. B. Fritz, Space Environment Laboratory (currently with Wave Propagation Laboratory), NOAA, Boulder, Colorado 80302 USA, September 1976, 61 pages, price $1.04.

UAG-59 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1974", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, December 1976, 144 pages, price $2.16.

UAG-60 "Geomagnetic Data for January 1976 (AE(7) Indices and Stacked Magnetograms)" by J. H. Allen, C. C. Abston and L. D. Morris, NGSDC/EDS/NOAA, July 1977, 57 pages, price $1.07.

UAG-61 "Collected Data Reports for STIP Interval II 20 March - 5 May 1976", edited by Helen E. Coffey and John A. McKinnon, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, August 1977, 313 pages, price $2.95.

UAG-62 "Geomagnetic Data For February 1976 (AE(7) Indices and Stacked Magnetograms)" by J. H. Allen, C. C. Abston and L. D. Morris, NGSDC/EDS/NOAA, September 1977, 55 pages, price $1.11.

UAG-63 "Geomagnetic Data for March 1976 (AE(7) Indices and Stacked Magnetograms)" by J. H. Allen, C. C. Abston and L. D. Morris, NGSDC/EDS/NOAA, September 1977, 57 pages, price $1.11.

UAG-64 "Geomagnetic Data for April 1976 (AE(8) Indices and Stacked Magnetograms)" by J. H. Allen, C. C. Abston and L. D. Morris, NGSDC/EDS/NOAA, February 1978, 55 pages, price $1.00.

USCOMM-NOAA-ASHEVILLE,N.C. -5/78/950

4 [illegible]

4